The Journal
OF THE
Michigan State Medical Society

ISSUED MONTHLY UNDER THE DIRECTION OF THE COUNCIL

VOLUME XV—No. 10
WHOLE NUMBER 170

GRAND RAPIDS, MICH., OCTOBER, 1916

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Office of Publication,
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Entered as second-class matter March 12, 1913, at Grand Rapids, Mich., under the Act of March 3, 1879

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Original Articles

PAPAL PHYSICIANS.*

VERY REV. FRANCIS X. BARTH.
ESCANABA, MICH.

Mr. President, Ladies and Gentlemen:

I would have you believe that in permitting myself to accept the invitation to address you, so graciously extended to me by your President, I have done so with great trepidation of spirit. Obliged somewhat to leave my own sphere to enter yours, I wondered what subject that I might choose, without having recourse to stale platitudes, could prove both interesting and instructive to you. I decided to take a page of medical history, somewhat novel in its title and new in its development, and submit it to your consideration. But before opening this absorbing page of history, permit me in all justice to disclaim any personal merit in reaching the conclusions of this address. I am largely indebted for the most part to Dr. J. J. Walsh's two famous books entitled "The Makers of Modern Medicine" and "The Popes and Science." I secured some information from the "Britannica," "The Americana" and the "International encyclopedias," from "Puschman's Handbook of the History of Medicine," from Ludwig Pastor's History of the Popes and from various minor sources.

I would observe further that I am not here as a party man to defend something with which I am personally allied for I consider objectively, from the standpoint of accurate history, that the Roman Pontiffs in their world wide activities need no apologists.

There is, however, such a startling state of positive ignorance and such an erroneous pretentious knowledge with regard to the supposed attitude of the Roman Pontiffs to science, and especially to medicine, current as the result of false teaching, that I thought I might well be pardoned should I, in the interest of truth and correct knowledge, submit to you this interesting page, for, I assume that every physician being a lover of his science must at the same time be interested in its history.

Gentlemen, very much of the history of the world has to be rewritten in our day. Not only are new records added to historical sources, not only do the so-called facts of history take on new meanings in the light of subsequent events, but the point of view from which the past is observed changes with the ever varying social order. Nor is this the main reason. It is sad to say it, but the truth must speak in its season, there has been a systematic and methodic conspiracy against historical truth, as is made clear by the mass of histories, text books and special treatises bearing on the acts of the Roman Pontiffs with the world, which for three or four centuries have poisoned the minds of men and are no more entitled to the dignity of being called history than an almanac, to a scientific treatise on medicine.

When Leo XIII, that magnificent world genius, decreed to open to scholars the archives of the Vatican then, and only then, could be written a satisfactory history of that great period of the world out of which were to rise the modern states of Europe. Leo XIII intended by this action to make the Vatican library the focus of European scholarship. No collection of ancient manuscripts can compare with that of the Vatican; and its archives have a value which can hardly be exaggerated for materials of the history of the Middle Ages. Pope Leo determined to place both the manuscripts and the archives at the disposal of scholars. Some squeamish dignitary and overzealous adviser remonstrated saying: "May not some hidden secret come to light that had better remain buried?" Whereupon, the masterful Leo is said to have answered: "Let the truth be known and let the truth take us where it will."

Behold the genius, gentlemen, that must preside over the making of history—truth. This is precisely what the editors of the Cambridge Modern History mean when they state that

*An address delivered by the Very Rev. Francis X Barth, Dean of Escanaba, at the General Session of the Fifty-First Annual Meeting of the Michigan State Medical Society at Houghton, Michigan, August 15, 16, 17, 1916.

many a fabrication must give way before the cold scientific consultation of original documents. They say: "Ultimate history cannot be obtained in this generation; but, so far as documentary evidence is at command, *conventional history* can be discarded and the point can be shown that has been reached on the road from one to the other." As a sample, perfidious and deliberate, of conventional history let us glance at a "History of the Warfare of Science with Theology in Christendom" by Dr. Andrew D. White.[1] No reader can study this work without coming to the positive conclusion that the constant policy of the Roman Pontiffs has been to prevent the progress of science and especially to stifle medicine. The reason for this uninterrupted policy, as is so childishly presented in the name of scholarship by Dr. White, is that it was to the interest of ecclesiastics to be applied to for healing. Suffering humanity was to look to prayers and not to drugs, to *Agnus Deis* and charms and not to hospitals and a well trained body of physicians for relief. Accordingly, Dr. White declares that the Roman Pontiffs placed a ban on dissection, prohibited anatomy declaring its study a sin against the Holy Ghost, prevented by an enactment the study of chemistry and thus, "as the grasp of theology upon education tightened, medicine declined."

I will observe, first of all, that as far as the *Agnus Dei* or kindred articles of devotion are concerned there is as much relation between them and the Catholic religion as there is between a bread pill and the theory and practice of medicine. Next, I will observe to all who take on faith such nonsensical stuff as presented by Dr. White that in presence of original documents his so-called history falls to pieces. Let us take a single example. Most of what is said as to the opposition of the Roman Pontiffs to medicine during the Middle Ages is founded on a supposed prohibition of anatomy and on a subsequent equally supposed prohibition of chemistry.

Dr. White emphasizes these two documents so much that most readers cannot but conclude that, even without further evidence they are quite sufficient to prove his contention. But, gentlemen, place Dr. White's assertions, one more damning than the other on one side, then place along side of them the documents themselves and behold the gallant knight's mace falls from his hands. Scientifically speaking, there are no documents on the prohibition of anatomy and chemistry.[2] The document Dr. White has tortured out of all meaning is one of Pope Boniface VIII, bearing on the sepulture of bodies brought home from the East.[3] The reason for the bull is very well known. During the Crusades the members of the nobility who died at a distance from their homes in infidel countries were prepared for transportation and burial in their own lands by dismemberment and boiling. The custom was so widespread as to constitute a serious menace to health, and might have furnished occasion for conveyance of disease. It is unnecessary to say that it was eminently unhygienic. This barbarous and unnatural custom Boniface VIII condemned under pain of excommunication; and this bull, so Dr. White claims, because of the supposed opposition of ecclesiastics to anatomy, did actually retard the progress and development of medical science for several centuries.

Not less ridiculous is the supposed bull of excommunication for the study of chemistry issued by Pope John XXII.[4] Now, this bull was a condemnation of certain alchemists who claimed to be able to make silver and gold out of the baser metals and who rascally exchanged the same for real coin. It was the legitimate prosecution and condemnation of real gold brick men, and this salutary measure for the protection of unsuspecting people, Dr. White presents as a Pontifical enactment proscribing the study of chemistry.

Face to face, gentlemen, with this intolerable conspiracy against any phase of historical fact, no matter by whom advanced, is it not the duty of every student, regardless of condition, to search for the actual truth and when the facts in original documents are authentically set forth to accept gracefully the conclusions? As a matter of fact, there is, and can be, no antagonism between religion and science. Up to the present moment, science, with all its wonders, has not destroyed one iota of Christian dogma; nor does the blatant assertion that it has, come from the scientist himself. The scientific movement of our day is largely in the hands of its popularizers and is made to appear as a witness against God and the Church. Read the scoliast, the cheap Sunday editorial and magazine writer; listen to the obfuscated professor or superficial school teacher rant on the

1. Read "Popes and Science" by Dr. J. J. Walsh.

2. Read Dr. Walsh: "The Supposed Papal Prohibition of Dissection" in "The Popes and Science." Page 28.

3. Read text of original document produced for the first time in English by Dr. J. J. Walsh "Popes and Science."

4. Read the interesting account of how Dr. Cruikshank of Brooklyn, N. Y., quoted Dr. White unfortunately in a lecture published in the Medical Library and Historical Journal of Brooklyn for July, 1905. See Supposed Papal Prohibition of Chemistry "Popes and Science" by Dr. Walsh. Page 120.

all powerful sway of science and you will hear that God, the soul and all other superstitions must give way. Then on the other hand, sit at the feet of the great scientist himself, read his books or listen to his teaching and usually you will find a man loving his science and through it believing and adoring his Maker.[5]

I would observe, gentlemen, that if any man wishes to deny God and spurn His laws for the government of the soul he ought to do so on his own responsibility and not tarnish the sacred name of science, which, but bespeaks the glory of the Creator by seeking in it an excuse for his own delinquences. Such men are not scientists nor are they any more qualified to speak in the name of science than the artful quack, who with pretentious knowledge and shameful practice lowers the dignity and nullifies the efficacy of your own profession. Permit me, gentlemen, to illustrate the foregoing by a simple example. Now, I said scientists, as a rule, do not deny religion; but a few years ago Thomas Edison declared himself a materialist. He had satisfied himself, he said, that the physico-chemical forces at work in the brain, with the resultant electrical effects, were sufficient to account for all the phenomena of conscious life in man. Up to this moment, Mr. Edison had been known as an ingenious inventor of useful mechanisms. His success in bending the forces of nature to his will had won for him a well deserved renown. He was recognized as an adept in the application of science to practical ends. Now, Mr. Edison has turned philosopher but his profession of materialism has left the world undisturbed and that for this reason: after professing his belief in materialism and summarily brushing aside the claims of religion Thomas Edison said: "I have always been a very busy man and really have not had time to study religion at all." Of what value before any court will Mr. Edison's testimony for or against religion be worth? How far did Mr. Edison's science determine his wonderful conclusion? If Mr. Edison knew no more of science than he appears to know of philosophy and theology we would never have heard about him.

Now let us glance at a real scientist, a master in Mr. Edison's own line. Not a mere applier of principles already discovered but himself a discoverer, a man who according to the testimony of Clausius[6] possessed all the characteristics of scientific genius, spacious vision, acuteness and infallible accuracy in deduction. I salute Andre Ampere, who in consequence of his brilliant discoveries has left his name on the scientific phraseology of our day as a glance at your electric metre will show you.

Of Ampere's attitude towards the Catholic Church Frederic Ozanam says: "Religion presided over the labors of Ampere's mind, shed its light over every field of his thought, and it was from this sublime point of view he judged all things, even science itself. This venerable scientist with all his wisdom and glory bowed unreservedly before the mysteries of Divine Teaching. He knelt at the same altar as Descartes and Pascal; side by side with poor women and children, humbler in soul than the least of them."

In concluding this thought, what I wish to emphasize is this: Ampere brought the same power of his analytical and synthetical mind to bear on religion as he did on science, and as he himself tells us, the result of his study and meditation was to compel him more ardently than ever to profess his Catholic Credo.

Now compare the two men:

Edison: "There is no God, no soul, hence no necessity for religion. Electric currents explain all the phenomena of conscious life in man. I have not had time to study religion and know scarcely a thing about it."

Ampere:[7] "I have studied with all the power of my mind the wonderful works of God and through the works of the Creator only I perceive that we can come to the knowledge of the Creator Himself. Just as the real movements of the stars are hidden by their apparent movements, and yet it is by observation of the one that we determine the other, so God is in some sort hidden by His works, and yet it is through them that we discern Him and catch a glimpse of the Divine attributes."

Thus if in the minds of the greatest scientists there is in fact no hostility between their profession of Christianity and the conclusions of their science, we may justly conclude that this supposed antagonism advanced by these champions of science, Edison and others to the contrary, is purely imaginary.

Insofar, gentlemen, as this question may be of interest to you to-day I must call your attention to the fact that the Roman Pontiffs have never been a stumbling block to the progress of science; on the contrary, the successors of St. Peter were carried away for seven centuries by the educational "zeitgeist" of their day. They gave money liberally and munificently and what

5. Read Kneller's "Christianity and the Leaders of Modern Science."
6. Read Kneller already referred to.
7. Read Kneller's "Life of Ampere" also "Makers of Electricity" by Potamian and Walsh.

was more to the point extended their patronage to scholars, artists and scientists in every intellectual department of life.[8] In view of the fact that the contrary is so universally held, it will be interesting to know, if in your line, I may be able to present anything to you worthy of your respectful attention. I will review a chapter from Dr. Walsh's Scholarly Book "The Popes and Science," wherein is treated the succession of illustrious papal physicians for seven centuries, many of them the most eminent doctors the world has ever seen. We will inquire briefly whether it is possible in this intimate relationship that existed between the popes and their physicians, who were also professors of the Papal Medical Schools, that friction or opposition could have ever existed.

Let us begin with the pontificate of Innocent III.[9] Probably, the most important work that the Popes accomplished for medical science in the Middle Ages was their encouragement of the development of a hospital system throughout Christendom. The great Pontiff who inaugurrated this work was Innocent III. The physician who was chosen by the pope to superintend this work was Guy of Montpelier, who was summoned to Rome in order that he might re-establish the hospital the Santo Spirito in accordance with what were considered to be the latest ideas in the matter of hospital building and the enlighted care of the sick. Rudolph Virchow[10] is first class authority on the hospital question and he hails Innocent III as a great humanitarian benefactor. He gives the names of eighty towns that were immediately influenced by the example of the first papal hospital. I submit to you the opinion, gentlemen, that if, as Dr. White asserts, the Roman Pontiffs had been an obstacle to medical progress and were so anxious to sell *Agnus Deis* and articles of devotion surely Innocent III and his successsors were very foolish and short sighted to prepare the way for the advance of medicine all over Europe by establishing well equipped first class hospitals.

The next doctor of note was Richard the Englishman who was body physician to Gregory IX. He had a universal reputation as a learned and clever man.

After Richard the Englishman comes Alderotti, who was physician to Honorius IV.[11] His life covers the history of the best part of the thirteenth century. During Alderotti's life a physician named Peter of Spain became pope under the title of John XXI. Peter of Spain was a distinguished natural scientist and the most perfect encyclopedist of his time. He was the first to write on the external anatomy of the eye, eight coats of which he described beginning with the conjunctiva and ending with the retina. If the established policy of the papal government was set in deathly combat against the progress of medical science, it is a strange thing that the college of Cardinals elected to the Pontificial chair so illustrious a physician as Peter of Spain.

The next great papal physician is Simon Januensis body physician to Nicholas IV. He was probably the writer of the first medical dictionary a very important work in the field of synonymics.[12] In his glossary you will find six thousand articles and it seems to have been the most consulted work for over one hundred years. It is interesting to note, and serves our purpose, that Simon Januensis received great encouragement in the production of his book from Nicholas IV and Boniface VIII, the very pope whom Dr. White declares retarded medicine for hundreds of years.

The next doctor of note is Guy of Chauliac, the father of modern surgery, and body physician to Urban VI. The popes had now removed the seat of the Papal Government from Rome to Avignon, but they still retained their policy of keeping in touch with the best physicians of their times. This is illustrated by the relations of the popes with Guy of Chauliac, a physician far in advance of his day;[13] for he taught that no one could practice surgery, with any hope of success, unless he devoted himself to careful dissection of the human body.

The next physician to claim our attention is an interesting man, not so much that he accomplished anything remarkable but because I desire to make him serve a useful purpose. His name was Cecco di Ascolo; he was a clever physician, a distinguished poet and philosopher. He was body physician to John XXII but left the service of the pope and returned to Bologna to teach astrology, which, at that time, was a department of medicine because the stars were supposed to have had an influence upon human health. Cecco got into a controversy with another doctor, one Dino de Garbo. The controversy waxed warm and poor Cecco was denounced to the public authorities as undermining the basis of government and, as the result of a bitter feud, was condemned to the stake.

8. Read Ludwig Pastor's History of the Popes Vol. I, P. 52 et seq. Vol. V. P. 329 et seq. Vol. VI, P. 458 et seq.

9. Read "The Foundation of the City Hospitals" by Dr. Walsh "The Popes and Science." Read also Ludwig Pastor's History of the Popes Vol. V, P. 61 et seq.

10. See "Makers of Modern Medicine" by Dr. J. J. Walsh, P. 359.

11. Read Dr. Walsh "Popes and Science."

12. Read "Puschman's Hand Book" of the history of medicine. Read also Dr. Walsh "The Popes and Science."

13. Read article in the "International Encyclopedia."

Now in this controversy between doctor and doctor, I have no doubt that some ecclesiastics were mixed up; but religion has no more to do with this than science is to be blamed because scientist opposes scientist, or doctor burns doctor. May I defend the thesis that science opposes science because there is in the record, startling in its details, that scientist has bitterly opposed scientist or doctor has bitterly opposed doctor? Such a thought is absurd. May you defend the thesis that religion is opposed to science because some ecclesiastics have condemned scientific conclusions or peeped around the corners with hypocritical glee when poor Doctor Cecco was burning? Never, gentlemen, it is absurd. Now let me make the case against ecclesiastics as bad as I can. I will even admit Galileo as a witness against them but at the same time I must say that in the history of medical discoveries there has been more unkindness and opposition between doctor and doctor, between scientist and scientist than there has ever been in all history between scholars and ecclesiastics. This is perhaps so startling a declaration to you that it requires elucidation. As to Galileo, I hear everybody say, does not his case show the unscientific temper of churchmen and their set opposition to free thought? Galileo is the one stock argument against the Church. The fact that the continuous policy of the Roman Pontiffs for centuries has been to favor every phase of human investigation, with the single exception of what pertains to the domain of faith and morals, is to no purpose. Galileo is led forth on every occasion and is made to prove that science has always had its bitterest opponent in theology, and its most uncompromising foe in the Roman Pontiff. There is no doubt that Galileo was prosecuted by the Roman inquisition on account of his teachings. But if Galileo had not endeavored to prove his scientific teaching by the Bible[14] I question whether he would have had any trouble with Church authorities. As far as *absolute* free thought is concerned, it is a misnomer. Assuming for the sake of argument the validity of the claims of religion to the allegiance of man how is any man free to deny his obligation or to change his belief? Some men write to-day of the necessity of a new religion. This is absurd, for if religion be the relationship between God and man how may it be changed or even regulated by the inferior party? It is absurd to say so, for in the domain of faith and morals, I have no free thought any more than you are free to teach that a man's appendix is in his foot. As far as this controversy is concerned Professor Huxley writing to St. George Mivart in 1885 said: "I gave some attention to Galileo when I was in Italy and I arrived at the conclusion that the pope and the College of Cardinals had rather the best of it." To return to my elucidation, let me take the case of Harvey[15] who discovered the circulation of the blood. When Harvey made his wonderful discovery he was but 25 years old. He was afraid to announce it for he feared his own profession; not because they could or would burn him at the stake, but because he realized envy, jealousy and human cantankerousness to be sometimes a more burning instrumentality of a man's undoing than the fire of the stake itself. He first taught the pupils of his class hoping through them to influence public opinion. He waited until he was 40 years old to publish his book, and when he did so, he lost many of his friends because physicians would not believe that a man who could teach such a strange idea as the circulation of the blood all over the body from the heart to the surface and back again, could possible be in his right mind. They therefore burnt him, metaphorically speaking, when they questioned his mental integrity; for when Harvey appeared on the streets the common people tapped their foreheads and smiled derisively at the poor man's vagaries. However, in all justice it must be said, that very soon this opposition disappeared, for the truth must always prevail, and Harvey left at his death a handsome fortune. But I submit the opinion that if in Harvey's time ecclesiastics had half opposed him for ever so brief a time, as physicians did, we would never have heard the end of it. Consider the case of Vesalius, the father of modern anatomy. He was not 30 years of age when he claimed the right to teach his teachers.[16] The fiercest opposition arose on all sides to Vesalius. One day, to pursue his studies, he and his friends stole a cadaver whereupon the people arose against him. Professor White claims him as a martyr of anatomy but I believe even today in many a locality, if the same thing were done in the same way, the same results would take place. It is, however, interesting to inquire why did so great a man as Vesalius go from the intolerance of the Netherlands to Rome?[17] How is it he was so free *there,* with unlimited liberty, to pursue his studies at the same time receiving the approbation of his pontifical patron?

14. Read article in Catholic Encyclopedia.

15. Read the "Britannica;" "Americana" and the International Encyclopedia.

16. Read article in Britannica.

17. Read article in "Americana."

At this juncture, it is instructive to glance at Servetus who had so much trouble while at the university of Paris. He had suggested certain changes in the mode of giving drugs. He had much to do with the general introduction of syrups to replace more nauseating preparations of medicine. His ideas met the most rancorous opposition. Factions were formed in the university. Riots took place in the streets and some students were wounded or killed. All of this occurred over the question whether medicine given to patients should be administered pleasantly or not. Poor Servetus had to leave Paris and when he got to Geneva, because of some book he wrote on the "Renewal of Christianity" Calvin burnt him at the stake.

Let us examine the life of Stensen who discovered and announced the fact that the heart is a muscle. Up to this time, the heart had been considered, not figuratively, as we now speak, but literally, as the seat of the emotions. Here comes along a young doctor who tells the whole world that it is wrong and at once becomes the object of bitter denunciation and persecution on the part of his brother scientist and physicians. Stensen was obliged to leave the Netherlands but why did he go to Italy the place above all places where Dr. White declares the Roman Pontiffs throttled the progress of medical science? He went to Rome, gentlemen, to find under the protection of the pope more freedom of thought for research, greater opportunity to continue his original investigations and greater appreciation of his new discoveries than he could find in any part of the world. I call your attention to Edward Jenner the discoverer of vaccination.[18] His successful solution has probably saved more lives and suffering than any other single accomplishment in the history of medicine and yet read the opposition led by physicians against the new idea.

Consider the case of Auenbrugger[19] who discovered the method of percussion of the chest which is so helpful in the diagnosis of chest diseases. He was 25 when he made his discovery but he did not publish it till he was 40. He dreaded, as he wrote, the envy, blame and even hatred and calumny that would come to him from those, who, above all other men, should receive with delight the new discovery. Nearly fifty years afterwards Laennec[20] completed the development of the diagnostic methods necessary for the differentiation of chest disease by the discovery of auscultation. Laennec's discovery, like Auenbrugger's, received a cool reception. Some physicians at once proclaimed that nothing could be accomplished for the progress of medicine by mere drumming on the chest. Laennec himself sums up the entire matter by saying: "Our age is not inquisitive and new discoveries are met by smiles and mocking remarks. It is easier to condemn than to test by actual experience." One of the great scientists of the last century was Dr. Thomas Young to whom[21] we owe so much with regard to the theory of light waves and the existence of ether to carry them. Scientists refused to listen at the beginning, though now it is the ground work of our thinking with regard to the movement of light. Dr. Young to avoid persecution and deprivation of practice was compelled to publish his grand discoveries and papers anomymously. In the French academy he was opposed by such men as LaPlace, Poissin and Biot and it was not until 1823—twenty-five years after his discovery, that he received any recognition. Dr. Young's disgust was so great he resigned from the Royal Society and gave himself to the study of Egyptian hieroglyphics where he distinguished himself.

Examine the history of[22] Dr. Oliver Wendell Holmes who made shrewd observations on puerperal fever and its causes. He lost most of his practice and many of his physician friends, who said that it was a raw idea to alleviate the pangs of childbirth by a little poetry. These shrewd observations of Holmes were perfected by Semmelweiss, teacher of obstetrics in Vienna. This great doctor observed that it was the physicians themselves and their students engaged in pathological work at the same time they were taking their course in obstetrics who caused the havoc among the patients in the obstetrical ward in the hospital. Semmelweiss insisted that this state of affairs must cease and that while the students were engaged in pathological work they must not be allowed to attend obstetrical cases. Poor Semmelweiss lost his position as a consequence and was sent to an insane asylum where in course of time he recovered from his disappointment.

I could furnish you, gentlemen, with a long list of scientific men like Pasteur, Chm, and others, who met the same fate and yet I would be a fool even to desire to defend the proposition that science opposes science. There must, however, be some reasonable explanation of this

18. Read Biography of Jenner in "Makers of Modern Medicine" by Dr. J. J. Walsh.

19. Read Biography of Auenbrugger in "Makers of Modern Medicine."

20. Read Biography of Laennec in "Makers of Modern Medicine."

21. Read Biography in appendix notes in the "Popes and Science" by Dr. Walsh.

22. Read "Medical Essays." Holmes works.

characteristic in men. It is to be found in psychology. It is old age opposed to youth—it is envy, jealousy and cantankerous human nature that loves conservatism and opposes innovations. I observe doctors and scientists in opposition to Laennec, clergymen in opposition to Jenner or Galileo, Calvin burning Servetus or doctors burning poor Cecco. I may not lose my head or bear false witness against my neighbor. It is not theology or pathology or biology or any other ology that I must blame but human nature itself gone wrong; jealousy, envy, hatred supreme in the mind over every other consideration that force scientist against scientist, priest against priest or doctor against his brother. Let us now return to poor Cecco di Ascolo whom we left burning at the stake, and take up once more the burden of this address.

The next great doctor that appears is Joannes de Tornamira who was body physician to Gregory XI. He wrote a book called the "Clarificatorium" for young physicians and students, which, according to "Puschman's Hand Book" was the most used text book for two centuries. On returning to Rome from Avignon, Gregory XI appointed as his physician Francis of Sienna, an eminent scientific physician of the day. The next papal doctor is Baverius de Baverris, physician to Nicholas V. He wrote a book on the differential diagnosis of hysteria, catalepsy, epilepsy and syncope. He made shrewd observations on gangrene and its causes and he was the first to prescribe iron for chlorosis. He, of course, did not know that chlorosis was due to a lack of iron but administered it for empiric reasons. In general, it is said of him that he anticipated very unexpectedly neurotic conditions supposed to have been recognized much later than his time.

The next distinguished papal physician is John of Vigo who was attached to the court of the fighting Pontiff Julius II. He was the first to write a treatise on wounds caused by fire arms. He recognized that fracture of the inner table of the skull might take place without that of the outer. All together he was a shrewd and clever observer. After the pontificate of Julius II, there was a change in the Roman policy as regards the medical schools. From now on the list of the papal physicians is the roll of the professors of anatomy of the Papal University Medical School. At this period a great trinity of anatomical professors flourished in the medical schools of Italy and each of the three received great encouragement from Roman Pontiffs. These three men were Vesalius, Columbo and Eustachius. Columbo was a pupil of Vesalius, the greatest anatomist of his time. It is interesting to read of his reception at Rome, how his course in anatomy was so enthusiastically attended that there were present several hundred people, among them priests and even cardinals whenever he gave his anatomical demonstrations on the cadaver.

All of this took place at the same time that Dr. White declares anatomy was proscribed in Rome and theology trampled upon medicine. Now the truth is as Dr. Fisher observes,[23] that this particular age at Rome was an age of remarkable tolerance for scientific investigation.

After the death of Columbo the next great man is Varolius papal physician to Gregory XIII who will be remembered as the pope under whom the reform of the Calendar was made by Father Clavius the great mathematician and astronomer.

To Varolius, we owe one of the earliest detailed descriptions of the anatomy of the brain and his name is engraved in the history of medicine because of "Pons Varolii" an important structure in the brain, now simply referred to as "the pons," was named after him.

After Varolius as papal physician comes Piccolomini and then Casalpinius[24] whom the Italians hail as the discoverer of the circulation of the blood before Harvey. These two men were illustrious physicians and in their day added prestige to medicine. Next in importance is Malpighi the great founder of comparative anatomy. He perfected Harvey's great discovery.[25] His name is deservedly attached to more structures in the human body because of tissues which he studied in detail, than any other man in the history of medicine. Malpighi represents the beginning of most of the comparative biological sciences and his original observations upon plants, the lower animals and then on the anatomical structure of man stamp him as an investigating genius of the highest order.

He was body physician to Pope Innocent XI. Lancisi the father of modern clinical medicine comes next. His books are classics. He was physician to Innocent XI and XII and to Clement XI. Finally, gentlemen, let us hail Morgagni whom Virchow calls the Father of Modern Pathology, body physician to five Pontiffs, the greatest of whom was Benedict XIV. Virchow calls Morgagni the Father of Modern pathology because he was the first to point out

23. Read annals of anatomy and surgery Brooklyn 1870-1880.

24. Read article on Casalpinius in "Popes and Science." Page 236 by Dr. J. J. Walsh.

25. Read article in Britannica on Harvey's discovery. Read also Malpighi in "Popes and Science," Page 240 by Dr. J. J. Walsh.

that for a knowledge of disease it is quite as important to know where the disease has been as to try to learn what it has been. Morgagni's life of ninety years covers most of the eighteenth century and proves that in his age there was no friction between religion and medicine. After Morgagni's time the days of the French revolution cast a cloud over the Papacy. There were political disturbances in Italy which caused the popes to be shorn of temporal power, and as a consequence, their medical schools lost in prestige and finally disappeared. Alas that it is so![26] for while they lasted papal physicians were among the most distinguished discoverers in medicine. Remember that the term medicine, at that time, included within itself botony, astrology, chemistry and mineralogy. To talk of opposition between science and religion in these centuries of friendly relations between the popes and distinguished scientists is to indulge in absurdities, common enough in conventional history of which Dr. White is a liberal manufacturer, but which original documents, the ground work of scientific history, push farther back into the rubbish chamber of outlived traditions.

And now, gentlemen, allow me to salute the dignity and nobility of your profession, for you are the sentinels of the commonwealth of Michigan. Assembled here in solemn convention you merit the respectful attention of the people for you are their effective guardians against the scourges of society—syphilis, tuberculosis, cancer, typhoid, pneumonia and other ills that attack the bodies of men. There is a close relationship between you as physicians of the body, and the ministry I represent, as physician of the soul. As the body and the soul are one entity and are therefore not opposed, I cannot see how your science and mine can be antagonistic one to the other. Mr. Cross has invoked a blessing upon you this morning, and so do I. I implore a two-fold grace, for I believe in prayer, as men have believed always, because there are more things wrought by prayer as Tennyson reminds us, than this world dreams of.

I beseech for you, gentlemen, the scientific temperament, the all-absorbing, broad, scientific temperament that knows no distinction of race or creed or paltry differences. I demand it for you because without it your profession is but a by-word. I beseech for you the humanitarian temperament without which your science is cold and fruitless; but the two united make the perfect physician.

Now, gentlemen, in conclusion, I thank you for the great privilege you have accorded me to present to you this interesting page of medical history. I extend my compliments to you at the opening of this session and I hope you will achieve great success in this convention. Let your voices ring out clear and true. Do not be compromisers for why should you be afraid of envy, superstition, ignorance or the unreasonable opposition of physician or layman? Take your stand fearlessly that you may deserve well of the commonwealth. It is written on the escutcheon of Michigan *"si quaeris peninsulam amoenam circumspice," if you seek a delightful peninsula, look around you. Change one word, "si quaeris peninsulam sanam circumspice,"* if you desire to find a peninsular state that is healthy, hygenic, and guarded scientifically by the sentinels of the state—its competent physicians—*"circumspice"* look around you.

26. Read concluding paragraph Page 220 "Popes and Science" by Dr. J. J. Walsh.

METHODS IN DIAGNOSIS OF SURGICAL DISEASES OF THE ABDOMEN.*

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The diagnosis of abdominal diseases has an intense importance on account of the fact that in many of them prompt surgical interference is demanded. Pain, vomiting or other symptoms may be due to a mere temporary impairment of digestion or it may be indicative of a serious condition demanding immediate operation. The diagnosis, therefore, must be considered a critical matter, both for the patient and for the surgeon. The accuracy of his methods and the soundness of his judgment in a few hours will be put to the test by an operation or by the course of the disease. The importance of the diagnosis of abdominal disease and the difficulties connected with it has prompted the writer to make a study of the methods involved.

Diagnosis may be divided into two distinct processes.

1st. The collection of the facts that bear on the case.

2nd. The conclusions or inferences from these facts.

All the clinical data and laboratory findings belong to the first part of the procedure. They together form the evidence from which the diagnosis is to be induced. There was a period

*Read at the Fifty-First Annual Meeting, M.S.M.S., Houghton, Aug. 15-16-17, 1916.

when the wonderful progress in physics and biochemistry created an unwarranted belief that the laboratory would supplant clinical data. However, the clinical history has again come into its own and it is now recognized as the foundation of diagnosis, while laboratory findings provide important aids and confirmatory evidence.

Information bearing upon the case is obtained from every available source; from personal and family history, from physical examination, by means of interrogation of the patient or of others, by laboratory tests and X-ray findings. All the data thus collected must be viewed in the light of testimony submitted, and as evidence from which conclusions concerning the diagnosis are to be reached.

In actual practice the collection of data and the diagnostic inference mingle. The half-formed conclusion waits for more clinical evidence. Notwithstanding this, these two processes are separate and distinct. The error in diagnosis may depend upon incomplete or defective clinical data, or upon faulty methods of inference. This paper is devoted particularly to the second of these processes, viz: methods of inference in the diagnosis of abdominal disease. This paper, therefore is not concerned so much with the newer diagnostic signs or symptoms of abdominal disease, nor with the newer methods of obtaining them, but rather with methods of utilizing the available data to arrive at correct diagnostic conclusions. A study of this subject shows that there are four methods of inferential diagnosis.

THE PATHOGNOMONIC METHOD.

In certain cases a symptom or set of symptoms definitely indicate by their presence the nature of the pathology. In these instances the symptoms or syndrome is said to be pathognomonic of the disease. For example: A certain form of excruciating pain is pathognomonic of gallstones. In a general way there are pathognomonic signs and symptoms present in cases of acute appendicitis, perforating ulcer of the stomach, acute intestinal occlusion, acute peritonitis, strangulated hernia and other forms of acute strangulation. Like the sign at the cross-road, the clinical picture in these conditions points directly to the diagnosis.

However, in a very large proportion of cases of abdominal disease, the signs and symptoms are not absolutely pathognomonic. It is a most common experience to find the condition in the abdomen different from what the symptoms seemed to signify. In other words they were not really pathognomonic. In its early stages it is not uncommon to find that the symptoms produced by one abdominal disease cannot be distinguished from those found in other diseases, and the early differential diagnosis must depend upon very close and careful employment of every available method of examination. The X-ray has contributed much assistance, especially in lesions of the stomach and intestine, but I believe that however conclusive the skiagraph may be, it is unwise to let it supersede the clinical signs, symptoms and other data.

A new method of examining the gall-bladder is described by J. B. Murphy. The ulnar edge of the hand is made to curve under the free border of the ninth rib. A percussive blow is struck when the patient has reached the height of inspiration, and if there is disease of the gall-bladder, he will experience a sharp pain. A similar procedure is used in detecting disease of the kidney .

One of the newer signs of appendicitis is elicited by the inflation of the colon by means of a colonic tube. When the air distends the cecum, distress is experienced if there is appendiceal disease. A very interesting and suggestive sign of chronic appendicitis is described by Dr. C. D. Aaron. Firm, persistent pressure is made over the appendix and a spasm of the pylorus is thereby induced if appendicitis is present. A description of the signs of abdominal diseases that are furnished by X-ray findings would lead this paper aside from its subject proper. It is sufficient to say that all these are attempts to make complete the pathognomonic syndrones of the different abdominal diseases.

The fundamental weakness or difficulty with the pathognomonic method of diagnosis arises from the fact that different pathologic conditions in the abdomen often produce a similar symptom complex. The X-ray findings may be equally ambiguous. However, when the data is obtained from different sources and by different methods, and when the X-ray and laboratory findings corroborate the clinical data, the pathognomonic picture becomes highly reliable.

THE METHOD OF IMMEDIATE SUCCESSION.

The second method is based on the sequence of cause and effect. When vomiting follows the inception of pregnancy a diagnosis is promptly made. In the same way the symptoms that follow the taking of a poison or unknown drug are ascribed to its effect. By the method of Immediate Succession we are inclined to infer that certain symptoms following a radical change in occupation, or diet, or climate may be traced to one of these factors.

It is on account of the employment of this method that so much importance attaches to the circumstances surrounding the beginning of a disease. If a patient has abdominal pain, or vomiting or intestinal stasis or distention or any other symptom of abdominal disease, in so far as diagnosis is concerned, the most important part of the clinical data is that connected with the inception.

Under what circumstances did it begin? That is the all-important question. Not its severity, nor duration, nor course. Not that these matters should be overlooked. How many chronic abdominal diseases, if their origin is investigated, can be traced to a difficult confinement, an injury to the abdomen, or some other immediate cause of which the disease is a direct successor!

The discovery of such a succession of events may not give a full and complete diagnosis, but it furnishes a most important key to a knowledge of the case.

This method of diagnostic inference may be applicable to any stage of a disease. For example; symptoms that are cleared up by a thorough catharsis are in some way connected with colonic stasis. A tumor in the lower abdomen that disappears by catherization may be considered to have been a urinary tumor.

THE METHOD OF ELIMINATION.

Probably every inferential diagnosis begins by the process of elimination. By the absence of certain signs and symptoms the possibility of certain diseases can be at once erased. If an acute abdominal pain is on the left side, we are inclined to eliminate appendicitis. If there is no vomiting, we eliminate acute obstruction of the small intestine. The absence of jaundice means the absence of complete obstruction of the common bile duct. In this way the problem can be reduced to a differentiation between two or three possible diagnoses. However, the method of elimination is a negative method and it is rarely that it will lead to a positive conclusion. In the majority of instances, several possible conclusions remain after the process of elimination has been used.

It is seldom that by the process of elimination a differential diagnosis can be made between gallstones and duodenal ulcer; nor between gallstones and gastric ulcer. The absence of distress after meals does not eliminate gastric or duodenal ulcer, and the absence of gallstone colic does not eliminate the presence of gallstones. Even the presence of pain on the left side of the abdomen does not warrant the conclusion that it does not arise from appendicitis.

In the majority of cases the method of elimination is useful in narrowing the problem of diagnosis to the consideration of a few possible conditions.

The ground for eliminating a disease is usually the absence of certain signs or symptoms, but it is necessary to exercise great care in the process. In a general way we eliminate the diagnosis of disease in an organ that performs its physiological function normally. For practical purposes this rule may serve, but in a stomach with a normal function there may be a latent ulcer, and there may be no detectable defect in the function of a gall-bladder containing stones, and accordingly, the elimination of disease from an organ because its function seems normal, must be exercised with reservation.

In regard to cancer, its elimination from the field of diagnosis cannot be made by the absence of pain, nor by a gain in weight. In cancer of the intestine there is generally blood in the stool, but not always, and consequently, malignancy of the bowel cannot be eliminated in this way. Nor is there any age that gives a warrant against it; therefore, the elimination method of inference is restricted in its application.

THE METHOD OF SYNCHRONOUS VARIATION.

This method of diagnosis rests upon the assumption that when symptoms and a condition show correspondinging variations, there is some causal connection between them. When a headache and other symptoms grouped under the name biliousness vary in intensity according to the degree of intestinal stasis present, there is ground for inferring that the intestinal stasis is to some extent the cause of these symptoms. By the same method we conclude that the various symptoms that increase in intensity during menstruation are in some way connected with some pathology in the uterus or its adnexa.

In those cases in which it is sought to make a diagnosis by therapeutic or diatetic tests, the method of synchronous variations is utilized.

As an illustration of these methods, the following case reports are appended:

Three years ago I was called in consultation to see a patient in the northern part of the State. He was a lawyer, 57 years of age, and was suffering from an attack of hiccoughs which had continued six days. Otherwise there was freedom from any significant symptoms and the problem in diagnosis was narrowed down to the discovery of the pathology and cause of the persistent hiccoughs. The attending physician had a very complete clinical

history. It showed that the present illness began ten days previously with nausea, vomiting, dizziness and a slight rise of temperature and intestinal stasis. After two or three days these symptoms subsided and the hiccoughs began and continued night and day during waking and sleep for six days. It is unnecessary to give here the full personal or family history and only those that seem to be of interest will be given.

The patient had a nervous temperament; was an indefatigable worker and had achieved considerable success in his profession.. With the exception of certain so-called heart spells, he had always been fairly healthy. For years he had been subject to very severe attacks in some way connected with the heart and characterized with tachacardia, and great prostration. During the attack they thought that he would die, but when it was over his physicians and consultants were unable to discover any organic heart lesion. In the present illness, however, there was no abnormal cardiac condition; the pulse was between eighty and ninety and of fairly good quality. There was no evidence of sepsis in or about the tonsils. Physical examination of the abdomen did not reveal any signs of abdominal disease. His physicians were inclined to believe that there was some pathologic condition in the abdomen responsible for the hiccoughs and they favored an exploratory operation. An X-ray had not been obtained, and it might have furnished some additional proof. The urinalysis was negative.. There were no indications of syphilis and the nervous system seemed to be free from any lesion.

The clinical and other data having been collected, it remained to apply some method of utilizing them to arrive at a diagnosis.

Hiccoughs are not definitely pathonomonic of any one pathologic condition, but taken in conjunction with the fact that the patient had a somewhat weak digestion, they suggested some gastric derangement. Beyond this mere suggestion, the pathognomonic method warranted no diagnostic conclusion. The pathognomonic picture might have been made more specific had there been an X-ray, but this was not available. An exploratory laparotomy would have provided definite information, but one hesitates to operate for exploratory purposes when there is entire absence of any sign or symptoms of some surgical condition.

The clinical history was gone over in search for any data that might provide an *immediate succession.*

It was discovered that the present illness began the day the patient arrived home from a trip to California. Shortly after his arrival his home caught fire and he became much excited and perturbed. That the illness with nausea, vomiting and prostration began that evening. Nothing could be found in his diet to account for the attack.. Insofar as the circumstances surrounding the onset were concerned, nervousness would seem to be the primary factor in the pathology, but this did not seem to be a satisfactory explanation for the continuation of the hiccoughs.

A second inquiry into the clinical history revealed a detailed account of the heart attacks from which he had occasionally suffered.

It developed that the family knew that these attacks reached their most severe stage when vomiting developed. Thereafter the patient began to improve.. Here was an instance of immediate succession, viz: vomiting followed by improvement in the symptoms. In other words, the removal of stomach contents by the natural process of vomiting was the circumstance that was immediately succeeded by the restoration of normal conditions. It was therefore concluded that in the case of the heart attacks, the presence of bile-stained fluid in the stomach was to some extent an etiologic factor.

This conclusion was far from a complete diagnosis in the present instance, but it provided a key to the situation. It suggested the probability that the attacks of hiccoughs were due to a factor similar to that present in the heart attacks.

In the strength of this probability, gastric lavage was ordered and about a half pint of dark fluid obtained. The hiccoughs immediately ceased and did not return for about three hours. The lavage therefore was to be repeated every three hours or as often as indidcated by the return of the hiccoughs. After about forty-eight hours they did not return again. Here we have the presence of bile in the stomach immediately followed by hiccoughs, repeated a number of times and furnishing practical proof that the one was the cause of the other. This man recovered his usual health rapidly and has, I believe, retained it to the present time. Nevertheless, it is quite obvious that the diagnosis is far from complete. I have ventured to report this case at some length in order to illustrate the method of diagnosis named herein "The Method of Immediate Succession."

CASE 2. "Mrs. P. R." first came under my care for the relief of severe abdominal pain. The patient was a married woman forty-seven years of age. She had one child, now aged about twenty years; no miscarriages. She seemed well nourished, but was of a highly nervous temperament. She was taken suddenly with a severe pain in the abdomen about an hour after her mid-day meal. The pain was so violent and sudden in its onset that she fell on the floor moaning with agony. By telephone I recommended the application of heat and half dram doses of paregoric till relieved or until I could see her. I saw her about one and one-half hours after the onset. Her husband had carried her to bed and she was lying on her left side, her thighs flexed on her abdomen. The pain continued and she moaned with each respiration. The abdomen was quite rigid, pulse ninety-five, temperature 99.5, no nausea, no vomiting. She said the pain seemed to be more in the left side than on the right and seemed to be in the region of the stomach, but she could not locate it definitely. She had never had an attack in any way resembling the present illness. Morphine was administered and a brief history of the case taken. She had suffered for several years from what she considered some form of disease of the stomach. She said she was often afraid to eat, but also said that the taking of food did not cause definite pain. She suffered with very stubborn, chronic constipation. Any unusual exercise caused shortness of breath and she was subject to frequent spells of faintness, but did not often actually faint. She had suffered at times with inflammation of the tonsils.

For several days before the onset of the severe pain she said her stomach had troubled her very much and she had reduced her diet to a little fluid

nourishment. However, she maintained that there was no actual pain in the stomach even after eating, but only a sort of distress and she was afraid to eat.

Here then we have a woman aged 47 years, suddenly taken with severe pain and giving a history of some indefinite form of gastric disease, with chronic constipation, and with a history of shortness of breath on exertion, and frequent attacks of fainting. It is obvious that a prompt diagnosis was urgent. The patient was removed to Providence Hospital at once, as the symptoms suggested the possibility of the presence of some surgical lesion. While the clinical picture could not be considered absolutely pathognomonic, it suggested some pathologic condition of the stomach, possibly a perforating ulcer. The history of chronic gastric symptoms, the severity and sudden onset of the pain and its location, all went to make up a fairly suggestive picture of a perforating gastric ulcer. However, there was the absence of vomiting and nausea, and the pulse and general condition did not exhibit the degree of collapse that I had seen in other cases of perforation. It was the absence of these symptoms that caused me to defer operation until more specific symptoms or signs could be obtained. The pain was moderately controlled with morphine, and blood examination, urinalysis and an X-ray of stomach ordered. The blood showed a decided increase in leucocytes; urinalysis was negative; and the X-ray a pronounced hourglass contraction. The latter seemed to strengthen the diagnosis of perforating ulcer.

However there were no indications in the X-ray picture of a perforation. These examinations were completed in sixteen hours after the onset of the pain, but by that time the pain had become localized on the right side in the region of the gall bladder which had become quite tender on pressure. The pulse was improved, temperature about one hundred, no abdominal distension and the picture of perforation was therefore distinctly less marked than on the first examination. In consultation with other surgeons, we decided that notwithstanding the primary symptoms, the case was probably gall-stone colic. This new diagnosis was confirmed by a laboratory report stating that a number of small concretions were found by examination of the feces.

Accordingly we had a tentative diagnosis made at the onset of perforating gastric ulcer, not sufficiently strong to proceed to operation, but nevertheless to some extent confirmed by X-ray examination. Then after certain changes in symptoms and by the course of the disease, we are constrained to abandon this diagnosis and conclude the case is gall-stones; this diagnosis being confirmed by the finding of concretions. These concretions were later examined by the technician of the laboratory and found to consist of bismuth subnitrate.

The method used in both these diagnoses was the pathognomonic. In both instances the clinical picture was to some extent confirmed by laboratory findings.. We hesitated to operate at first because the pathognomonic picture was defective and incomplete, and later on because although we felt more assurance that there was gall-bladder disease, the patient was improving and an examination of the heart seemed to indicate that the patient would not endure a severe surgical strain. It was considered also that in addition to the gall-bladder trouble there was also a gastric lesion that might need attention. For these reasons the operation was not performed.

The patient continued about the same for ten days. Temperature about 100 degrees; pulse 90 to 100, moderate pain in the region of the gall-bladder and some distress in the whole upper abdomen. She was able to take a little nourishment, the bowels were very constipated and cathartics and enemata were necessary. On the tenth day hemorrhoids developed and became very painful and distressing, so that it was almost impossible to obtain an evacuation of the bowels.. After several days of intense suffering, piles were removed under ether anesthesia. The operation took fifteen minutes, but the patient took an anesthetic badly. However, she made a good recovery and thereafter was free from rectal trouble, the bowels moving with mild laxatives and without pain.

About one week after the operation the patient suddenly developed paralysis of the muscles on the left side of face and of the left arm. There was also absence of pulse in the left radial artery, and considerable swelling developed in the left side of the neck. The pulse gradually grew more rapid and respirations more labored and the patient died about three weeks after the onset of the disease. Before she died a diagnosis was made of embolus in the left subclavian artery, and of pneumonia in the base of the right lung.

A very thorough and complete autopsy revealed the following conditions:

(1) A large ulcer in area as large as a nickel in the left ventricle of the heart, and several scars on the mitral valve and other portions of the left ventricle indicative of previous ulcers.

(2) A large embolus in the left sub-clavian artery.

(3) A large subphrenic abscess containing more than a pint of pus. The diaphram on the right side was pushed upward into the pleural cavity.

(4) The lower lobe of the right lung was solid and studded with many infarcts.

(5) The stomach was absolutely normal, no signs of ulcers, scars or contractions.

(6) The gall-bladder was normal, no gall-stones present.

(7) The rectum was free from any signs of infection and healing was progressing normally.

(8) There was absolutely no signs of any abdominal disease.

It was the opinion of the pathologist who performed the autopsy that the cardiac ulcer was the primary pathology. It was probably responsible for the infection that lead to the subphrenic abscess.

The embolus is the subclavian artery was either from the pulmonary or pleuritic infection or directly from the cardiac ulcer.

The severe pain that marked the sudden onset of the disease was very probably a diaphramatic pleurisy.

It is noteworthy that the diagnosis of perforating gastric ulcer and later the diagnosis of gall-stones were both founded upon pathognomonic syndromes and were both absolutely erroneous.

Had the clinical history of this patient been thoroughly investigated and the circumstances demonstrated that the fundamental pathology in her case was ulcerative endocarditis and not gastric disease, it is possible that the nature and

source of the initial pain would have been disclosed. The knowledge that the cardiac ulcer was succeeded by the acute pain would have afforded a basis for the application of the method of Immediate Succession.

Notwithstanding the great advancement of the medical sciences in modern times, diagnosis of the diseases of the abdomen is erroneous in a large proportion of cases. It occured to the writer that to some extent the responsibility could be traced to fallacious conclusions that might be avoided by a clearer knowledge of the four methods of inference employed in the diagnoses of these cases. By years of experience one gains familiarity with these methods, but the recent graduate in medicine is often hopelessly submerged by the multiplicity of clinical and laboratory facts and is at a loss to know how to make use of them.

It would seem that in the curriculum in medicine there should be included along with physical diagnosis, instruction in methods of diagnostic inference. Such a course would promote accuracy in reasoning, would train the judgment in the valuation of clinical data, would supply the greatest incentive to a student of medicine to make purposeful and systematic clinical histories, and would supply him with conscious instruments of inference in diagnosis.

A better knowledge of these methods of inference and of their restrictions and attending fallacies would stay the hand too ready to operate, and would provide the necessary conviction to the conscientious surgeon.

LABYRINTHITIS—REPORT OF CASES IN ACUTE SUPPURATIVE OTITIS MEDIA AND AFTER OPERATIONS.*

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Of all branches of the surgical art—general and special—otology has perhaps made proportionately the greatest advance in the last two or three decades.

From very little a quarter of a century ago, otology has developed into a very respectable department of surgery, showing to its credit not a few epoch-making advancements which have resulted in much good to otologic patients and at the same time redounded much to the credit of the otologist.

No one can deny the very great good which has followed in the wake of intratympanic surgery, and none will gainsay the brilliancy of achievement in mastoid surgery which, beginning with Wilde's incision, progressed to the gimlet-hole openings of the early mastoid operators, and finally came into its own in the classical simple mastoid operation and the more pretentious radical tympano-mastoid exenteration.

One can think only in terms of highest commendation for those who, like Schwartze, Stacke, Politzer and Sebenmann, on the Continent, McEwen in Glasgow, Balance in London, and McBride in Edinborough; Dench, Randall, Beck and a host of others in our own country have been pioneers and early builders in this most fascinating Otologic Surgical Structure.

These men and their co-workers have not been content to limit their field of endeavor to the narrow confines of the tympano-tubo-mastoid region, but early turned their attention to the complications and sequelae of temporal bone sepsis and a far greater area of usefulness was soon uncovered, thus intracranial and neck suppurations fell naturally into the otologist's sphere of usefulness, and it was not long before the untiring diligence which had made of that *terra incognita,* the mastoid, a clearly charted field had also explored every nook and corner of the adjacent areas—anatomically and pathologically, and we have Bezold's perforation—superficial and deep cervical abscess—internal jugular vein thrombosis with its accompanying glandular involvements in the neck, and still wider afield, the multitudinous manifestations of a general pyaemia as sequelae of temporal bone infections.

What more brilliant achievements in surgery can be found than that which has fallen to the otologist in his investigation of the various intra-cranial complications of temporal bone sepsis, where such important pathologic entities as extra and intra-dural abscess, perisinus abscess, sinus thrombosis, deep brain abscess and meningitis have fallen to his lot for investigation, diagnosis and surgical management?

About when these fascinating problems of otology, which I briefly mention here to show the really broad surgical foundation upon which otology rests, had become fairly well investigated from the pathologic, clinic and surgical viewpoints and affairs otologic were apparently becoming well settled, along came the Vienna School, including Urbantschitsch, Barany, Alexander, Naumann and Ruttin with a whole batch of new and absorbing problems as touching the various pathologic processes in the internal ear.

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An immense and ever widening field was soon opened and, not yet, are many of the labyrinthine problems which form the subject of this communication at all well understood by the bulk of those who call themselves otologists.

The labyrinth, composed of the vestibule, the cochlea and semicircular canals, bony and membranous, in its small area presents more baffling problems than are perhaps to be found in any other anatomic division of the human body. The Vienna School of Otologists has evolved, from thorough anatomic and pathologic studies and from clinical data, a classification which is at once simple, comprehensive and understandable, and furthermore, any known pathologic manifestation of labyrinthine origin can be made to fit into it.

Ruttin, in his monograph "The Labyrinth," gives the following classification of labyrinthitis:

(1) Circumscribed labyrinthitis.
(2) Diffuse serous secondary labyrinthitis.
(3) Diffuse purulent manifest labyrinthitis.
(4) Diffuse purulent latent labyrinthitis.
(5) Traumatic labyrinthitis.
(6) Serous induced labyrinthitis.

These six divisions are more or less phases of one process, and in the course of events a circumscribed labyrinthitis may become a diffuse serous secondary labyrinthitis and the latter may in its turn become a diffuse purulent manifest labyrinthitis, the quiescent end-result of which may, if the patient survives, be a diffuse purulent latent labyrinthitis.

Traumatic labyrinthitis may become purulent, as may also serous induced labyrinthitis.

From a surgical standpoint as bearing upon the question of the necessity for immediate surgical opening of the labyrinth, the diagnosis of the advent of a diffuse purulent manifest labyrinthitis is all-important, and this diagnosis is made, not by the general manifestation of disease as shown by the temperature, pulse, blood picture or general condition or subjective symptoms presented by the patient, but by the entire absence of all labyrinthine reactions in the affected ear. Hearing is abolished. The turning test shows disharmony and there is an absence of the caloric and fistula reactions. The exact meaning of the galvanic reactions is as yet somewhat obscure.

It is true that the diagnosis between a diffuse purulent manifest labyrinthitis and some cases of diffuse serous secondary labyrinthitis is not possible, as the latter may have a complete abolition of all labyrinthine reactions, but in such a case the surgical procedure must be as in diffuse purulent labyrinthitis.

The outstanding diagnostic point is that as long as any labyrinthine reaction is present the labyrinth operation can be safely held in reserve, but as soon as all labyrinthine reactions are abolished, then the labyrinth must at once be opened. The one pathologic state that forms an exception to this rule is where, there is a completely ossified labyrinth. The latter condition is to be diagnosticated by the establishment of so-called compensation which is shown to exist by an equalization of the after nystagmus following turning to the right and left. There is a reduction in both, say to twelve seconds, but both are equal.

The cases of labyrinthitis which I shall report in this communication are few in number and do not fall under the most common headings of the classification of this disease as given above, there being two cases of serous induced labyrinthitis in acute suppurative otitis media, one case of diffuse serous secondary labyrinthitis in the sixth week of healing after a simple mastoid operation, and two cases of traumatic labyrinthitis following the radical mastoid operation.

Inasmuch as in all these cases the labyrinthine activity as manifest by hearing, caloric or fistula reaction never became extinct, in none was it deemed necessary to do the labyrinth operation, the simple mastoid or the radical operation being sufficient to bring about a return to health.

In those cases which show a complete abolition of labyrinthine function the operation of choice is that one, given to us by Naumann, which involves:

1st, A complete radical tympano-mastoid exenteration.

2nd, The outlining of Trautmann's triangle.

3rd, In cases where the sinus is well forward the exposure of the dura in Trautmann's triangle. If the sinus is far back and the floor of the middle fossa does not overhang, dural exposure here may be avoided.

4th, Undermining the facial ridge and the external semicircular canal and entering the vestibule from behind.

5th, Entering and enlarging the oval window, when a delicate probe can be introduced into the oval window and be made to appear posterior to the facial ridge, the vestibule has been sufficiently opened for purposes of drainage.

6th, Removal of the promontory to expose the interior of the cochlea.

7th, The complete Naumann procedure, which involves the removal of the petrous pyramid to the intracranial orifice of the internal auditory canal is reserved for such cases as already show symptoms of meningitis.

REPORT OF CASES.

Case 1. Mrs. S., aet. 49. Extensive epithelioma of external auditory canal and tympanic cavity. Radical operation. Traumatic labyrinthitis. Recovery. Later, death from malignant disease.

This patient presented an extensive epithelioma of the external auditory canal which had extended to the middle ear and antrum. An attempt had been made to remove this growth through the external auditory canal, which had met with failure.

A radical tympano-mastoid exenteration was determined upon and was done very thoroughly.

In the course of following the ramifications of the disease the horizontal semicircular canal was wounded. Immediately upon recovering from the anesthetic the symptoms of violent labyrinthine disharmony were present, viz., intense vertigo, nausea, vomiting and nystagmus of the third degree toward the good ear. There was also the characteristic decubitus, the patient lying on the well side.

From day to day these symptoms became milder, and had entirely disappeared by eight or ten days. This patient finally died from metastatic cancer.

Case 2. Mrs. V., aet. 37. Chronic suppurative otitis media. Large polyps, foul discharge. Hearing present but depreciated. Caloric test present but delayed on account of polyps. Fistula test absent. Middle ear suppuration had lasted for eight years. There had been no attacks of vertigo.

A complete radical tympani-mastoid exenteration was done. Posterior wound closed by Panse flap. Immediately upon recovery from the anesthetic this patient had vertigo, vomiting, nausea, loss of equilibrium and rotatory nystagmus to the healthy ear. Hearing was much reduced but not abolished. She assumed the characteristic decubitus.

In forty-eight hours the symptoms were much improved and in six days entirely gone.

The case has progressed to a complete recovery in the usual way.

In this case the injury was done to the foot plate of the stapes in the oval window.

The point of greatest diagnostic value is the immediate appearance of symptoms of labyrinthine disharmony upon the recovery from the anesthetic, because a secondary manifest serous labyrinthitis following a radical operation will not show itself earlier than thirty-six hours after the operation. No further surgical interference should be done if improvement of symptoms are shown from day to day.

The treatment consists in keeping the patient in bed and giving bromides internally. Perhaps they may modify the intensity of the symptoms.

The prognosis is good if the process does not develop a purulent manifest labyrinthitis, in which case the labyrinth should be at once opened for drainage.

Case 3. C. F., aet. 30. Serous induced labyrinthitis occurring suddenly on fifth day of an acute suppurative otitis media. Simple mastoid operation. Recovery. This patient was admitted to Harper Hospital at 8 a. m., Dec. 27, 1915.

The patient complained that three days previously his left ear began to ring and feel deaf and full and that his throat was painful when he swallowed. He soon began to have severe pain in the ear and his medical man incised his ear drum on the second day.

Upon admission to the Hospital the left external auditory canal was filled with pus. Canal wall red, and swollen. Tympanic membrane thick, red and bulging. Mastoid was much swollen and extremely tender to the touch. Cervical gland swollen on left side. Under gas anesthesia the drum was again freely incised. X-Ray examination showed cloudy mastoid cells.

Bacteriologic examination of pus from the ear showed a pure culture of the streptococcus.

Temperature on admission was 99.4°, pulse 104. At noon of the same day the temperature reached 101° and the pulse 120, which was the highest points reached during his eleven days stay in the hospital, and here I want to draw your attention to the fact that this time antedated the advent of the labyrinthitis by thirty-six hours, and that during the time of the labyrinthine disturbance the temperature was at its highest 100.2°, and that only for a short period. This serves to illustrate the fact that the temperature is of but little value, diagnostically, in labyrinthitis.

At 9 p. m. on Dec. 27, one-half cubic centimeter strepto-pneumococcic-sero-bacterin was given hypodermically. At 10:30 the patient vomited, was greatly nauseated and complained of vertigo. Had a poor night. On the morning of the 28th of December, temperature was 98.8°, pulse 104, nauseated and vomiting. Slight spontaneous nystagmus to the right of first degree. After gastric lavage and mustard to the epigastrium, felt much relieved.

An interesting question arises here bearing upon the influence, good or bad, of a vaccine upon temporal bone infections.

Is the sudden onset of labyrinthine symptoms in this case one and one-half hours after the hypodermic injection of a vaccine to be looked upon as a violent focal reaction, or was the involvement of the labyrinth in the area of edema surrounding the focus of infection merely the natural result of the violent form of infection present.

An interesting question it is, and, it must be conceded, one not easy of plausible solution, indeed it seems quite impossible to be definite about it.

However, the one fact of the very quick appearance of symptoms of the labyrinthitis would make one skeptical as to the role played by the vaccine.

Ninety minutes would seem to be too short a time for a violent focal reaction to show itself. Also, thirty-six hours after the injection the symptoms were all much aggravated, and further, they promptly disappeared when the

collateral edema was removed by the good drainage incident to the performing of a thorough simple mastoid operation.

When seen at 8 a. m. December 29th, 1915, the patient said he had had a poor night, nauseated, vomiting, vertigo much increased, with much more marked rotatory nystagmus to the right, mastoid tender. External auditory canal filled with pus. At this time the functional test of the labyrinth showed it to be active, as follows:

1st, With exclusion apparatus in right patient could hear loud words *ad concha.*

2nd, Syringing with very hot water modified the rotatory nystagmus.

3rd, Fistula symptoms not present.

4th, Turning test not employed on account of the patient's condition.

In view of these findings an immediate operation was done.

The operation decided on was a very complete simple mastoid exenteration.

The mastoid cells were found completely broken down and filled with pus. Within twenty-four hours all labyrinthine symptoms had disappeared, and while the patient was restless for a few days, his recovery was uninterrupted and he left the hospital on the eleventh day.

I wish to call your attention to the graphic temperature and pulse chart of this case, as it illustrates what extensive and serious pathologic changes may be going forward in the temporal bone with but comparatively little temperature elevation.

The pulse, however, shows more departure from the normal than does the temperature.

Case 4. Mrs. E., aet. 60. Serous induced labyrinthitis occurring on second day of acute suppurative otitis media. Simple mastoid operation. Recovery with diminished hearing, persistent tinnitus and slight vertigo.

This patient was admitted to Harper Hospital on the third day of her otitis media. Mastoid tender. X-ray showed cloudy mastoid cells. Bacteriologic examination of pus showed a mixed infection of pneumococcus and streptococcus.

The labyrinthine functions were not abolished. A spontaneous rotatory nystagmus to the well side was present. There were also vertigo, nausea, vomiting. Temperature never went above 99° and pulse 90. A simple complete mastoid operation was done. The nystagmus, nausea and vomiting gradually disappeared and the patient left the hospital on the sixteenth day.

At the end of six weeks the mastoid wound had healed, ear became dry. Hearing, however, has never become normal, and there is now, after seven months, considerable vertigo but no nystagmus.

It would seem that, in view of the incomplete recovery of labyrinthine function in this case that there probably must have been more than an induced serous labyrinthitis present.

Case 5. Mr. V., aet. 43. Diffuse serous secondary labyrinthitis on thirty-sixth day of healing of simple mastoid operation. Radical operation. Recovery.

This patient's first admission to Harper Hospital was on March 12, 1916, at which time he gave the following history: Two weeks ago contracted a severe cold. Sore throat followed and ten days ago earache began. Eight days ago ear drum ruptured spontaneously, followed by profuse discharge but no relief from pain. Mastoid became swollen and tender. Present condition shows right ear discharging freely and right mastoid swollen and very tender to touch.

X-ray.—"Plates were made of both mastoid regions. The cells are well developed on both sides. There is not much evidence of involvement of the right cells. The bulk of these are pneumatic, and the only change evident is a slight cloudiness in the region of the antrum."

Urinary Analysis.—Normal urine.

Blood Picture.—

Reds	4,500,000
Whites	12,000
Haemoglobin	90%
Polys.	75%
Small	16%
Large	8%
Eosin	1%
	100%

Polymorphonuclear leucocytosis.

The graphic chart of this case is before you for pulse and temperature.

On March 14, a complete simple mastoid operation was done at which time more destruction of the cellular elements of the mastoid was found than one would judge from the skiagraphic pictures.

This patient remained in the hospital for fifteen days.

The healing seemed to be progressing in the usual way until May 12, when the patient complained of pain in the mastoid region, and a general want of well-being.

On May 13th I was called hurriedly to this man's home and found him confined to his bed lying on his left side, nauseated, vomiting, with vertigo, and intense rotatory nystagmus to the left.

He was readmitted to Harper Hospital and put to bed for observation.

It was found that his vertigo, vomiting and nausea were persistent, that his nystagmus was increasing in severity and that his labyrinthine functions were active, he could hear loud conversation with the exclusion apparatus in the left ear. The fistula symptom was present, compression diminishing the intensity of the spontaneous nystagmus. Hot water did the same thing.

In view of the above findings, a radical tympanomastoid exenteration was decided upon and done on May 18, 1916.

His labyrinthine symptoms became immediately much improved and by the fourth day after operation had entirely disappeared. This man remained in the hospital until June 12, 1916.

He has made a complete recovery. The graphic chart of his pulse and temperature is also before you. By it you will see that during the period of labyrinthine activity it was but little disturbed.

Points of real interest are:

1st, The workable classification of Ruttin.

2nd, The conception that all these types may run the one into the other.

3rd, The diagnosis of purulent manifest labyrinthitis by the entire absence of all labyrinthine reactions.

4th, The recognition of the necessity for making drainage of the labyrinth part of the surgical procedure when there is an absence of all labyrinthine reactions.

5th, The exception to the rule laid down in the fourth section, and the means at hand to make the diagnosis of the existence of "compensation."

6th, When compensation has become established, the recognition of the fact that there may be ossification or there may be sequestration of the labyrinth and the widely divergent surgical necessity in each—the former is left alone; the latter exenterated.

7th, The realization of the necessity for promptly draining the labyrinth when all labyrinthine reactions are abolished in acute cases.

8th, The realization of the necessity for making the labyrinth operation part of the surgical procedures when the radical operation is done for chronic suppurative otitis media in the presence of a dead labyrinth as shown by the entire absence of all labyrinthine reactions.

REPORT OF A CASE OF ABDUCTOR PARALYSIS WITH REMOVAL OF ONE VOCAL CORD.*

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The following case illustrates the difficulty which may accompany the diagnosis and selection of appropriate treatment in paralysis of the abductor muscles of the vocal cords, also the scarcity of details in the published literature which might serve as a guide to the man confronted with the responsibility of such a case.

Joe S., a Polish boy 9 years of age, was brought to me suffering from obstructed breathing, with cough and dyspnoea when lying down. No satisfactory history of the beginning of the trouble could be obtained owing to the inability of the accompanying attendant to speak English.

Large tonsils and adenoids were present preventing any view of the vocal region and sufficiently obstructive to account for most of the symptoms noted.

Accordingly both were removed under general anesthesia with no more trouble in the administration than usually accompanies the presence of enlarged tonsils. This was near the end of July and the trouble in breathing dated from the previous March.

He was brought again September 15, six months from the commencement of his trouble and this time the history elicited that when first attacked, he had a sore throat, which lasted about ten days, and was very weak, but did not go to bed. There were other children sick in the school with sore throats but none died and no physician saw them, so no diagnosis was made.

Three weeks after the onset of his illness he was attacked by hoarseness, a brassy cough and had repeated attacks of dyspnoea which were worse when lying down to sleep.

In the light of this history and the subsequent developments in the case, a tentative diagnosis of diphtheria and post-diphtheritic paralysis was made.

At this visit he had a harsh rasping cough and could articulate with the greatest difficulty in a high falsetto voice. Inspiration was so difficult as to cause marked suprasternal and epigastric retraction.

There was marked cyanosis and the tidal respiration sounded like that of a case suffering with laryngeal diphtheria.

With the larynx well cocainized an attempt was made to see the condition of the vocal bands but this was impossible as the epiglottis overhung too much and with each effort at inspiration it folded on itself like the palm of the hand going into a tight glove.

One attempt to intubate was made under local anesthesia and two at broncoscopy under profound general anesthesia but without success.

The smallest size broncoscope tube would not pass without force enough to lacerate the tissues. Skiagraphs, with fine definition, failed to show the presence of a foreign body in the air passages or a tumor pressing on the recurrent laryngeal nerve.

Under quiet, rest and good diet in the hospital together with potassium iodide alternated with strychnia the dyspnoea lessened and the general condition improved so that he was allowed to return to his home, only to return, in less than a week, worse than before. The third night afterwards I was compelled to do a tracheotomy to save him from death by suffocation.

With the improved aeration following the tracheotomy his condition improved amazingly; he grew to like the tracheotomy tube and to remove and replace the inner tube for cleansing.

After a few days, when granulations had formed well about the tube, the double one was replaced by a single of slightly lesser calibre fenestrated on the convex curve, for the purpose of encouraging him to try to breathe through the normal passages.

Systematic training was now begun to overcome the spasms of the pharyngeal muscles and allow a view of the vocal cords. About the third week this was accomplished and the left cord was seen lying in the median position while the other was nearly in the cadaveric position.

On attempting phonation the left cord remained immovable while the other passed over it and rose above at an angle of about fifteen degrees. At no subsequent examination could the glottic chink be seen as the cords lay either in contact or overlapping thus accounting for the difficult breathing.

The cords were like two flabby wet valves of

*Read at the Fifty-First Annual Meeting, M.S.M.S., Houghton, Aug. 15-16-17, 1916.

wash-leather with overlapping edges and the greater the inspiratory effort the closer did they close the larynx.

The patient's home was in the country, miles away from any physician and the family too poor to keep him in the city where I could watch him, and the county officials refused to become responsible for his care.

Rather than condemn him to a lifetime of wearing a tracheotomy tube, it was decided to remove one cord to insure a safe breathing space and by leaving the other to give him all possible chance to establish whatever compensatory action was possible in case the cord should regain any of its function.

The endolaryngeal route offered no chance for the cutting punch forceps because of the failure of the attempts at passing the small bronchoscope tube so nothing but laryngo-fissure seemed left to do.

Accordingly the patient was anesthetized with a mixture of one part chloroform and two parts ether vaporized with a hand ball atomizer and inhaled through the tracheotomy tube.

The skin was incised from the thyroid notch to the cricoid cartilage, hemorrhage controlled and the two cartilages incised in the median line. The blood was kept from entering the trachea by packing gauze into the trachea around the tube and the cut edges retracted with single sharp hooks. This brought the paralyzed cord into view and with scissors it was removed together with the corresponding arytenoid cartilage.

The divided cartilages were united with buried sutures and the overlying skin with interrupted silkworm gut.

Healing was without discharge except at the lowest skin suture which became slightly infected by the secretions from the first tracheal wound.

Nothing was placed within the larynx to prevent adhesions because only a strip of bare surface a quarter of an inch wide on the site of the removal was left bare and this was opposed to intact mucous membrane which was in constant motion during respiration.

A few days following the operation the inner tracheal cannula was removed and the outer one provided with a cork which the patient was encouraged to wear as constantly as possible, breathing through the fenestrum on the back curve of the tube and the natural passages.

This he was able to do most of the time in the daytime but could not do at night, for even when he fell asleep with the cork in he soon awakened and had to have the cork removed.

Granulations from the cut edge of the tracheal wound, forming in and blocking the fenestrum—it was found necessary to close it and make a new one lower down and more in line with the bottom of the tube.

After this was done the patient wore the cork in his tube all day; could sleep half an hour at night with it in but wakened and insisted he could not go to sleep again with it in. The laryngo-fissure was done three weeks after the tracheotomy and at the end of eight weeks more the site of the cord removed was seen by indirect inspection to be a half funnel shaped white scar extending downwards from the ventricular bands to the subglottic space. The voice, although hoarse and rough had become quite useful, being of about the normal pitch and loud enough to be heard a distance of thirty or forty feet.

Five weeks after the operation the tube was removed in the morning and the opening sealed externally but by the latter part of the afternoon it had to be replaced which was done with considerable difficulty as it was showing a marked tendency to heal.

The attendant dyspnoea seemed to be induced by fear of not being able to breathe.

Three weeks later the tube was again removed and loose gauze placed over the opening through which the patient could breathe until the opening closed of itself. The patient slept most of the night with occasional wakening.

The opening had fully closed by the following day and that night patient slept the entire night, which he continued to do during the ten days longer that he remained in the hospital.

RECAPITULATION.

At the first visit no history could be obtained and the existent symptoms could easily be due to the adenoids and tonsils which were removed. At the second visit the symptoms were those of more complete obstruction and the obtainable history pointed to an unrecognized diphtheria as a possible cause. The X-ray was negative and the impossibility of passing the vocal cords or of adequately inspecting them suggested some cicatricial adhesions which the history gave no support.

Tracheotomy was forced upon us and the subsequent treatment was largely the effort to escape the wearing of the tube indefinitely.

Although the tracheal tube can be worn a long time safely, in one case reported twenty-four years, still one would hesitate to condemn a patient to the discomfort and possible danger in its continuous use.

Removal of the cord has been suggested and tried but the writers I found mentioning it did not recommend it and had not tried it themselves. Their objections were not stated except as to the effect on the voice. This I do not consider a valid objection in cases similar to this because before the operation only a violent effort produced a thin squeak not audible more than ten feet and thus of no practical use.

Had he been left with only a whispering voice and still have escaped the tube and been free from the danger of suffocation it was worth the trial.

THE POLIOMYELITIS SITUATION IN DETROIT.*

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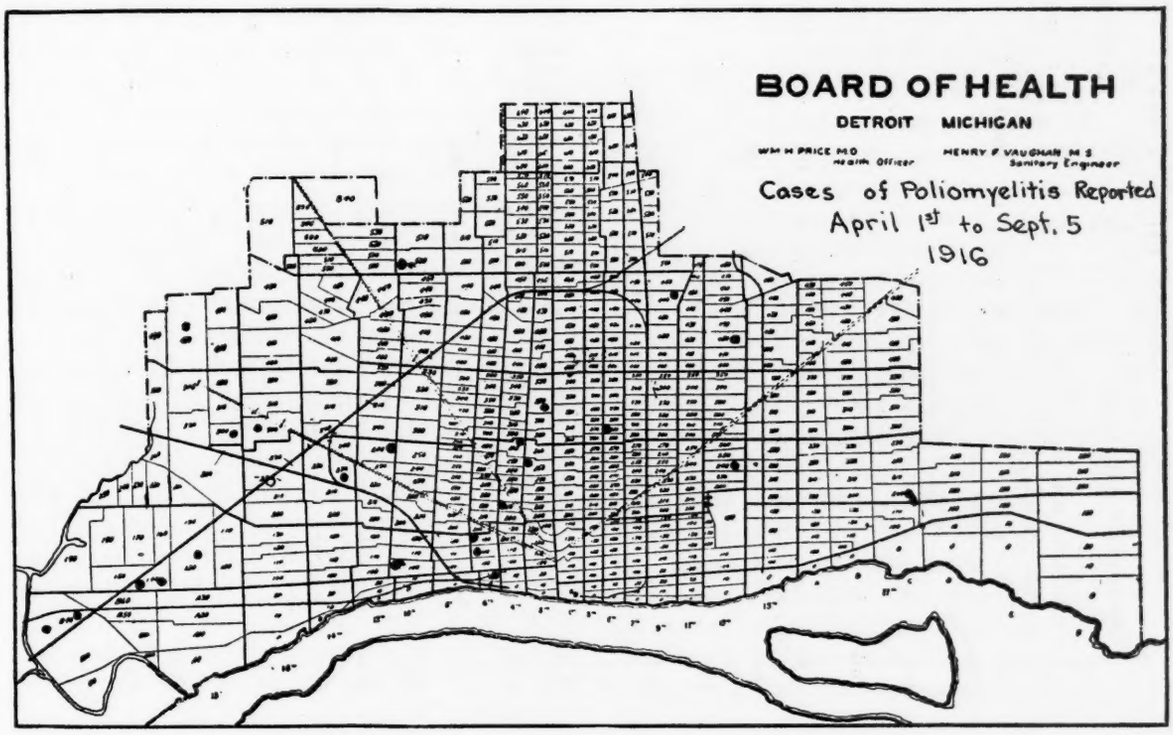
Since July 1, 1916 there have been reported to the Board of Health 21 cases which have been verified as cases of anterior poliomyelitis; infantile paralysis, "Heine-Medin disease," spinal infantile paralysis or "poliomyelitis anterior acuta" as it is variously called. Owing to the large amount of publicity given to this disease by the newspapers, the medical profession and the people altogether are on the lookout for such cases. We therefore feel that a greater percentage of such cases have been reported to the Board of Health than in previous years. In all there have been reported ninety cases by physicians as being suspicious of this disease. Of such reports only twenty-one were found to show evidence of the disease. Compare this with reports of suspicious scarlet fever or diphtheria cases where Board of Health diagnosis verified that of the reporting physician in four out of eighteen instances in diphtheria and twenty-six out of fifty instances in scarlet fever for the same period.

The source of infection in these cases was in most instances obscure. In two instances the cases had only recently come from other cities one of them one day before and the other one week previous. In another instance a girl of 11 years developed the disease six days after a child of fourteen months living in the same house had been removed to the hospital with poliomyelitis. This child had played with but three other children none of which has as yet developed the disease although one of these three had a marked intestinal derangement without any sign of paralysis. On the other hand the method of spread of infection in some cases was very obscure. Several mothers averred that their child had not left the house from two to four weeks before the onset of the disease.

No evidence of milk as a carrier or of flies or of other insects as carriers could be concluded. With the one above mentioned exception, no connection between any our cases one with another could be obtained.



The accompanying map shows the location of such cases:

Because of such indefiniteness as to the source of the infection no definite date as to the period of incubation could be obtained. I saw one case, a doctor's daughter (in Windsor), which developed forty-eight hours after the doctor had attended a previous case. The other definite case showed a period of incubation of seven days.

The onset in three of the cases was described as sudden and paralysis of some sort developed within twenty-four hours. On the other hand eighteen cases had prodromal symptoms from

*From the Detroit Board of Health, Department of Communicable Diseases.

SERIES OF 21 CASES

Case No.	Type	Age	Sex	Date of Onset	Vomiting	Diarrhea	Constipation	Sore Throat	Day of Paralysis	EXTENT OF PARALYSIS					Pain	Tenderness	Temperature	REFLEXES		Other Child'n in Family	COURSE OF DISEASE	REMARKS
										R.L.	L.L.	R.A.	L.A.	Face				L.L.	R.L.			
1	S	2	F	7-7	—	=	+	—	2nd	+	+	—	—	—	++	++	100.5	—	—		Improved Rapidly	
2	S	2	F	7-9	+	—	—	—	3rd	+	+	—	—	—	+	+		—	—			
3	S	3	F	7-13	—	—	—	—	4th	--	+	+	—	—						3	Improved Rapidly	
4	S	3	F	7-25	—	—	—	—	2nd	+	+	—	—	—	+	+		—	SL +	3	Improved Rapidly	
5	S	3	F	7-16	+	+	—	—	3rd	+	+	—	—	—	+	+	101	—	SL +		Much Improved	Pain in back marked
6	S	2	F	7-27	—	—	—	—	2nd	--	+	—	—	—	+	+	100	—	SL +		Improved Rapidly	
7	S	5	F	7-29	—	—	—	—	1st	+	—	—	—	—	—	—		+	—		Improved Rapidly	
8	BS	15M	F	7-30	—	+	—	—	3rd	+	+	+	—	L+	+	+	103	—	—		Improved Rapidly	Adrenalin treatment and splints
9	BS	9M	M	8-26	—	—	—	—	4th	+	—	—	—	L+	+	+		+	—	2	Slight Improvement	
10	S	6	F	7-31	—	—	—	—	2nd	+	—	—	+	—	++	++		+	—	2		Died 4th day, Broncho-pneumonia
11	S	6	M	7-30	—	—	—	—	2nd	+	+	—	—	—	++	++		--	—	7	Very Slowly Improving	
12	S	5	M	8-8	+	—	—	—	2nd	+	+	—	—	—	++	++	102	—	—	0		Died 18th day, Meningitic onset
13	S	15M	M	8-9	+	+	—	—	2nd	—	+	—	+	—	+	+		—	+	0		Onset with convulsions and nasal discharge
14	S	16M	F	8-16	+	—	—	—	2nd	—	+	—	—	—	+	+		—	+	1		Somnolence with onset
15	S	2	F	8-16	+	+	—	—	2nd	—	+	—	—	—	+	+		—	+	1	Improved Very Slowly	Spine markedly tender
16	S	1	F	8-21	+	—	—	—	1st	+	—	+	—	—	+	+		+	— RA—	2	8-28 walking well &uses rt. hand	Onset. Falls after 2-3 steps
17	S	3	M	8-12	—	—	+	—	3rd	—	+	—	—	—	+	+		—	+	0		
18	S	21M	F	8-21	—	+	—	—	2nd	+	—	—	—	—	+	+		+	—	0		Had retracted hydrocephalic cry
19	S	15M	F	8-27	+	—	—	—	1st	+	+	—	—	—	+	+		—	+	0	Improving 9-29	Stiff neck at onset
20	S	9	F	8-25	++	—	—	+	2nd	+	+	—	—	—	++	++		—	—		Slowly Improved	Exposed to 14.
21	S	5	M	8-27	—	—	—	—	2nd	+	—	—	—	—	++	+	102.4	+	—	2		Onset with much sneezing

one to four days before the advent of any noticeable paralysis.

In nearly all of the cases there was some form of gastro-intestinal disturbance, nine began with vomiting, in one case at least at hourly intervals for a period of twenty-four hours. Five cases showed diarrhea and two with noticeable constipation.

The degree of fever was variable. Of eight cases more closely observed the maximum temperature varied from 100 to 103 and was of the septic type, usually reaching normal in four to five days after the onset of the disease.

Sore throat was complained of in only one case. This case also showed signs of "throat paralysis." In four cases a history of nasal discharge and a "cold" was obtained. In a few cases sneezing was a noticeable symptom. In another case broncho-pneumonia was present from the onset.

Nervous system symptoms were variable. In twelve cases the child was restless and irritable; in four cases stupor or somnolence was present. In all cases some degree of tenderness of muscles were present. This varied from slight tenderness to the severest pain with the slightest touch. In one case a possible diagnosis of acute muscular rheumatism was suggested, the pain was so severe. In most cases tenderness along the region of the spine existed.

Of these twenty-one cases, fifteen were amongst female children and six male children, their age varying from nine months to 9 years. The greater number of cases (fourteen) were 3 years and under. The cases were all of the spinal type although two showed symptoms of bulbar involvement, one of these a child of fifteen months showing paralysis of the left side of the face and neck and marked asymetry of face, the other showed only slight involvement of facial nerve on left side. The muscles affected were various, of the total of twenty-one cases the lower legs were affected in all instances, the arm or arms in five and the affections of both arms and legs in five. The muscles of the hip were decidedly affected in one case.

On previous page is given a summary of the cases.

Close observation for the symptom described by Draper (that flexion of the spine anteriorly produces pain and stiffness of the neck) showed it positive in four out of six cases.

A peculiar hydrocephalic cry was heard in two cases.

Of the twenty-one cases eight were sent to the hospital. The quarantine has been set as six weeks. Two cases have died, one (case No. 10) in the fourth day of the disease. This case was complicated by broncho-pneumonia. Another case (No. 12) died on the eighteenth day. Post-mortem examination of the lungs revealed a left lobar pneumonia. Cross sections of the spinal cord showed decided round cell infiltration of the grey matter. (1)

As a routine precedure spinal puncture was performed on all hospital cases upon admittance and repeated as necessary according to the symptoms.

The following is the result of the analysis of fluids obtained: (2)

No.	Description	Sugar Test (Benedict's)	White Cell Count
1	Clear	Positive	Lymphocytosis (no count)
2	Clear	Positive	Lymphocytosis (no count)
3	Clear	Positive	Poly.? Largel. 30% S.L. 70%
4	Clear with much blood	Positive	Poly 2% L.L. 40% S.L. 58%
5	Faintly Turbid	Positive	Poly? L.L. 35% S.L. 65%

The other nineteen cases rapidly improved, in most instances much of the paralysis disappearing in a short period of time. The eight cases received at the hospital were treated by various methods. In two cases, one a mild one and the other a moderately severe bulbar-spinal type, a method after Meltzer (3) of injecting 20 min., of adrenalin intraspinally after withdrawing about 15-20 cubic centimeters of spinal fluid and repeating each eight hours for three days, was used. Both these cases made apparently wonderful improvement. The other hospital cases were treated with rest in bed, rest for the affected parts by the use of well padded splints and the careful use of urotropin

On the other hand the cases not sent to the hospital were treated with early massage usually performed by the mother. It was striking to observe the improvement made in some of the cases which in addition to the massage were urged and to a great extent trained by the ever anxious mother to as early as possible make use of the paralyzed parts by the use of adjacent groups of muscles. Such observation of cases can not help but make one think that a great many cases exist and a doctor is not called and the child makes a practically complete recovery by natural muscle training and massage by the mother.

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1017 Kresge Bldg.

THE SERVICE DE SANTE, FRENCH ARMY, OR THE CARE OF THE FRENCH WOUNDED

LEO C. DONNELLY, M.D.
(With the French Red Cross).

Each soldier in the trench has a first aid packet containing a large piece of sterilized ganze in wax tissue paper, two sterile safety pins, a roller bandage, and a triangular bandage upon which pictures of the different methods of application are printed

If he is badly wounded in "no man's land" he lies there and ultimately dies. Unburied dead accumulated since September, 1914 still lie in heaps between the lines. A man wounded in the first line trenches is sent back by stretcher bearers. These stretcher bearers are noncombatants, have special uniforms, and are never taken prisoners. The patient or the stretcher bearer applies the first aid dressing. If it is an officer a doctor may come up to the first line. Bad cases remain in the trench until dark when they make "a run for it," across the open to the rear. The trenches are hardly wide enough for two men to pass, and many sharp angles occur, making stretcher bearing nearly impossible. The patient is taken to a "Place de Sucours" where he first meets a doctor who does the work absolutely necessary. Here arteries are tied, splints applied, and a more substantial dressing done.

The Place de Sucours may be a dug out, a cottage, etc. It is always under shell fire and doctors are often killed. The Roll of Honor shows two to four doctors killed daily in the medical service.

The patients are now carried one or two kilometers back of the trenches, left on the ground, in the shelter of woods, or a hill. The auto ambulances, nearly always at night, carry the patient from this place to the first aid hospital. Ambulance drivers are often young volunteer Americans serving without pay. From four to eight autos, each with a driver and a helper act under a captain and are quartered in small cottages. They work all night, make many trips without lamps of any kind, over roads torn up by shell fire, and are practically always under a shell fire.

The first aid hospital contains from twenty to 150 beds. Some have female nurses.

It is expedient at this point to explain the tagging of soldiers. Each soldier has an oval aluminum tag chained to his right wrist, with his name, class, regiment number, and number in his regiment. His clothing is also marked in the same manner. At the Place de Sucour a red tag attached signifies immediate attention, a blue tag not so serious. At either the Place de Sucour or first aid hospital slightly wounded men may be sent back to the front.

At the first aid hospital he receives 500 units of antitetanic serum. Necessary amputations, abdominal operations and lung injuries are put to bed. Here he gets his second tag, a short history, with treatment and diagnosis. Very severe cases and chest cases remain here until death ends the case or until they can be transferred. Large pieces of shell are removed, plaster casts or aluminum splints may be applied .

From here the patient is removed by ambulance to the railway head. The railway head is practically a dressing pavilion, only a few operations being done here. Next by train to the distributing centers, about 40 kilometers back of the line and every 50 or so kilometers along the line. At the distributing centers are the first permanent hospitals.

The permanent hospitals take all the men that can go back to the front in less than seven days, also all cases unable to travel further due to shock, hemorrhage, etc. Here necessary operations are performed.

At the distributing center the injured gets his third and last tag, with a history, treatment given, destination, dressing to be done en route and food to be given en route. Each distributing center in the Army Zone has a classified list of all hospitals in that zone. All of these base hospitals daily telegraph the number of their vacant beds to the distributing center.

During quiet times every two or three days a train load of 300 wounded leave the distributing center for base hospitals. These cases are selected and sent where they can get the best care according to their condition. The trains are composed of twelve to sixteen coaches Permanent stretchers are swung in the coaches. and each train has its regular corps of two doctors and orderlies. They take care of the patients en route to the base hospitals, do dressings, administer medication and regulate their food.

Base hospitals have 200 to 7,000 beds. Total capacity of Rouen hospitals under Col. Russel. R.A.M.S. is 7,000 beds.

The base hospitals in the army zone take immediate care of the more serious wounds. They have orders to discharge all patients as soon as they are fit for army service.

A patient may be discharged to one of three places. Discharged as cured on seven days' permission at home, then returning to the front;

discharged to Havre where he can obtain more than seven days' permission at home before returning to the front; or, discharged to other hospitals in the interior.

Patients must be sent back to the front as soon as possible. Cases, except of special interest, are evacuated at the end of four weeks to the interior.

A patient injured in such a manner as to render him unfit for further military service is reformed and the French government does nothing more for him. Private charity cares for the reformed. Schools are established for teaching the blind and deaf; maimed men are taught occupations within their power, artificial arms or legs are furnished, and gymnasiums give massage and graduated exercises for paralysis, contractures, old fractures, etc. These private charities are mostly financed in United States, are well managed and are the most deserving charity existing here at present.

Patients enter base hospitals two to five days following their injury. Their wounds are all slightly septic, with moderate inflammatory reaction. As a rule they are well dressed, except that the dressing is dry, matted to the wound and probably forty-eight hours old. Many have casts or aluminum splints. Physically the men are well nourished, all are very tired, dirty and constipated.

The French military service requests that diligent search be made for *all* foreign material, whether giving symptoms or not. The reason is this:

If a soldier knows he has a piece of shrapnel in him, he is liable to worry, or manufacture symptoms and impair his efficiency as a fighting man. France is not looking to the future, but is bending all her efforts to win the war, and she needs every man. Consequently French surgeons go for all missiles with a resultant mortality of 15 per cent. for projectile wounds of the lungs, abdomen, thighs and other deep parts.

The American surgeons have refused to operate for missiles that do not produce symptoms; they have a very low death rate, and consequently have a very high reputation for efficiency. It is exceedingly difficult to find these missiles after locating with anterior-posterior and lateral radiographs.

The French sacrifice 15 per cent. of these special cases in order to supposedly increase the military value of the remainder.

American surgeons as a rule remain three months. They learn how to handle large numbers of cases. They have observed much, but their knowledge as to the results of their methods employed for the treatment of these injuries are necessarily in a major part deductive, as the majority of cases are slow and last many months.

The only men who have positive knowledge of the actual results obtained are those who have been able to follow their cases through. These men remain for long periods ofttime, generally for the duration of the war.

Dr. Hutchinson of the American Ambulance, Dr. R. R. Fitch of St. Valery en Caux and Dr. John Blake of Ris Orangis have had exceptional opportunities for observing their cases.

The Pharmacopoeia Revision.—As usual the pharmacopoeia about to be issued will be antiquated when it comes out. Some of the drugs in it will have become more or less obsolete, while many new ones which have proven of value will not be there. Since all the publications of the A.M.A. are issued promptly and in excellent style, and are complete, correct and up to date, it is suggested that the U.S.P. should be taken over by the A.M.A., and be henceforth published by it. It may be extreme to say that the world would be almost as happy without a Phamacopoeia, but at least we could get along very nicely with a Pharmacopoeia about one-half the size of the present one. A good deal of the matter it contains is quite superfluous and its deletion would prove distictly advantageous to (1) the book, (2) to the medical profession, (3) to the pharmaceutical profession and (4) last but not least, to the students of medicine and pharmacy (*Critic and Guide*, July, 1916, p. 239).

Aspirin.—The patent on aspirin will expire next year. The Bayer Company, the American agents, view with disfavor the prospect of losing the right to the sole manufacture of acetyl-salicylic acid. This may explain the campaign of publicity which the Bayer Company has inaugurated in the lay press in which the public is urged to buy the Bayer brand of acetylsalicylic acid (aspirin) only. There can be no better time than the present for the medical profession to substitute for the non-descriptive name "aspirin" the descriptive and correct name acetylsalicylic acid. (*Jour. A.M.A.*, Aug. 12, 1916, p. 515).

Olio-Phlogosis.—The Council of Pharmacy and Chemistry reports that Olio-Phlogosis (The Mystic Chemical Co., Kansas City, Mo.) is not eligible for admission to New and Nonofficial Remedies. Olio-Phlogosis is to be applied externally by means of a cotton pad for pneumonia, bronchitis, pleurisy, etc. According to information sent to the Council it consists of glycerine to which has been added small amounts of essential oils, iodine, resorcinol, boric acid, quinine bisulphate and sodium thiosulphate. The Council concluded that the claims for Olio-Phlogosis are unwarranted, that its composition is complex and irrational and that the non-descriptive and therapeutically suggestive name is likely to lead to uncritical use. (*Jour. A.M.A.*, Aug. 19, 1916, p. 631).

TRANSACTIONS

OF THE

Clinical Society of the University of Michigan

Stated Meeting, June 7, 1916

The President, UDO J. WILE, M.D., in the Chair
Reported by REUBEN PETERSON, M.D., Secretary

REPORT OF A CASE OF HYDROCEPHALUS WITH SPINABIFIDA AND COMPLETE SITUS INVERSUS.

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The case I wish to report tonight, is of interest from several viewpoints. Its principal obstetric importance comes from the relative rarity of forehead presentations, but the associated malformations which the fetus exhibited are also well worth consideration.

Primary forehead presentations, or those due to factors operative during pregnancy are very rare, because, if deflexion of the head has proceeded thus far, labor usually produces full deflexion and we have either a brow or face presentation to deal with. The case which is to follow is one of secondary forehead presentation occurring after the onset of labor and for which the etiologic factor was first definitely determined upon vaginal examination. This type of presentation, when persistent, becomes as formidable as persistent brow cases, spontaneous delivery being practically impossible if the fetus is of normal size and development.

A. S., primipa, age 22 years, single, entered the Obstetric Clinic January 12, 1916. Her family history was entirely negative for any chronic or hereditary disease. Her personal history was also unimportant, as she had always been well aside from the usual children's diseases. No history of lues or Neisser infection could be obtained. She menstruated first at the age of twelve years and her periods had always been regular and normal. No constitutional symptoms were present. Her last period began May 24, 1915, and was of the usual duration. She had had no show since. A definite history of coitus occurring June 1, was, however, obtained and accordingly her expected labor was set for March 8, 1916. The pregnancy thus far had been uneventful. Examination showed the patient of moderate frame and of good general nutrition. The heart and lungs were negative. Abdominal examination showed her pregnancy advanced about seven and a half months; the fetus was apparently of normal size, presenting in occiput right transverse position and was active. Pelvic measurements were large, interspinous diameter measuring 27 cm.; intercristal 29.25 cm.; external conjugate 20 cm.; tubers 9.5 cm.; diagonal conjugate not reached. Vaginal examination was entirely negative and ballottement of the fetus was obtained. No physical findings at all suggestive of lues were noted.

Labor.—The patient first began to have definite contractions about 10 p. m. March 7, and was accordingly prepared for labor. When examined at 3 a. m. the findings were as follows: Breech in the fundus; back on the right, poorly felt below the umbilicus, and on deep palpation felt near the midline extending partly on the right and partly on the left. The small parts were in the left upper abdomen; head in the pelvis, well fixed, with the cephalic prominence on the right side and definite. The fetal heart sounds were best heard on the right side, below the umbilicus, near the midline and were normal. Rectal examination showed the cervix dilated to about 3 cm. with the membranes intact. Directly over and within the cervical rim could be very distinctly palpated the large anterior fontanelle. Uterine contractions were occurring every three or four minutes, each lasting forty-five to sixty seconds. Examination at 8 a. m. gave practically the same abdominal findings, except that the back was more easily

felt in the lower right midline. The fundus was high with the breech reaching almost to the ensiform. The fetal heart tones were now heard best in the middle and to the left. The cephalic prominence was also more marked on the right than at the previous examination. Rectal examination showed that no descent had occurred, and the anterior fontanelle was still distinctly palpable. This seemed larger and more definite than normal. With these findings, a diagnosis of partial extension of the head, that is, forehead presentation was made. The cervix was dilated about 4 to 5 cm. with the membranes still unruptured. Contractions were occurring regularly, every three minutes, of good quality, and with increasing severity. Examination at 11:30 a. m. showed the same findings. On rectal examination the head was still felt well above the spine and the cervix half dilated. During each contraction the large fontanelle seemed to recede towards the right and posterior, as though the head was attempting further extension.

Upon consideration of the fact that the patient had been in active labor for approximately fifteen hours with strong uterine contractions throughout, that the head had not descended and was tending towards further extension, it was decided to interfere. She was put upon the table at 12:45 p. m. and prepared for delivery. Vaginal examination confirmed the previous findings, except that the cervix was found nearly fully dilated and very soft. The bones of the fetal head were felt to be very loose and movable and the anterior fontanelle very large. No distinct crepitation was observed, but the feel was more like that of a macerated skull. The fetal heart rate was ascertained to be 124. A probable diagnosis of moderate hydrocephalus was now made. The membranes were ruptured artificially and a moderate amount of greenish amniotic fluid drained away, no hydramnios being present. The fetal head was found to be lying in occiput right transverse position, partly extended with the large fontanelle the most dependent portion. The sutures were observed to be easily palpable and somewhat widely separated. With the hand inside the cervix the head was flexed and the occiput rotated manually anteriorly to the symphysis, and held in that position by abdominal pressure, while forceps were applied. The fetal heart at this time became somewhat rapid, about 160 per minute. Moderate traction was carefully made by forceps following which the fetal heart gradually slowed. Examination after the forceps were loosened showed a prolapsed cord. This was replaced manually and traction again carefully attempted. No advance of the head was obtained and it was not deemed advisable to use forceful traction. The fetal heart tones could no longer be obtained. Craniotomy was, therefore, decided upon. The forceps blades were left on, the scissors introduced through the sagittal suture, posterior to the anterior fontanelle and the meninges perforated. Immediately there was a gush of clear fluid, as though a second amniotic sac had been ruptured. Considerable brain substance also drained away. Careful traction with the forceps now produced steady advance of the head and the latter was delivered easily at 1:40 p. m. The third stage of labor was practically normal, except that the uterus remained rather atonic and it was found necessary to remove the placenta manually from the lower segment. The membranes were practically intact and showed no evidence of an interrupted twin pregnancy. There was a slight second degree laceration, which was immediately repaired. The patient then received a hot intrauterine douche before being carried to the ward.

Examination of the fetus showed it to be a female, 53 cm. in length, fully developed and weighing about seven and one-half pounds. The head was distinctly globular in shape and large, even after the evacuation of fluid measuring as follows: occipitofrontal circumference 35 cm.; bitemporal diameter 9 cm.; biparietal diameter 10.5 cm.; suboccipitobregmatic circumference 34 cm. The temporal fossae were obliterated. These facts bore out our previous diagnosis of moderate hydrocephalus, even though the features of the fetus were not distinctly hydrocephalic. The skull bones were rather thick accounting for the fact that no definite crepitation was obtained.

There was also present in the lumbosacral region a spinabifia with the skin and membranes of the cord intact, but reddened and thinner than normal. On autopsy another very interesting condition was discovered, namely, a complete situs inversus, characterized by dextrocardia, large lobe of liver, gallbladder and appendix on the left side of abdomen, spleen and stomach on the right, and the sigmoid dipping down into the pelvis along the right sacroiliac synchondrosis. The pelvic organs and external genitalia were normal.

On looking over the literature I find that in a curiously large number of cases the sex of malformations is female. This is particularly true of double monsters. Very frequently malformations are combined in the most curious

ways. Whether this is a purely accidental occurrence or a definite relationship cannot be said, although Schwalbe states that some French writers have discovered definite laws with regard to such occurrences.

Hydrocephalus is usually explained by an excessive secretion from the ependymal cells of the choroid plexus. The amount of fluid varies from moderate amounts up to five liters or more. As to the etiology, Ballantyne believes that antenatal hydrocephalus is due to an embryologic arrest of development to which may be superadded in the fetal period a disease affecting the malformed parts. It may also arise in postnatal life without a preexisting malformation in the fetal epoch, as a consequence of birth injury, tumors, meningitis, etc. Causes of the antenatal type are thought to be chronic alcoholism, syphilis, trauma or any fetal meningitis. Of 362 cases of hereditary lues studied by Hochsinger, thirty-four were hydrocephalic. Maternal infections, as smallpox, influenza, syphilis or tuberculosis may also play a part in the etiology. Hydrocephalus often recurs in the successive children born to one mother, and is often associated with other malformations, as microcephalus, encephalocele, spinabifida, clubfoot, ascites and hydramnios. Of sixty cases reported by Von Winkel, eighteen showed spinabifida. Among the sixty there were also five cases of double clubfoot, two of ascites, and three of hydramnios. Of 330 cases of spinabifida reported by Schwalbe, forty-one were accompanied by hydrocephalus.

The characteristics of a hydrocephalic head are its globular shape, thin skull bones, translucent and displaced outward, small face and eyes displaced downward and forward. The body is smaller, as a rule, although in some cases, as the one reported tonight the fetus may be otherwise well developed and of good size.

The occurrence of this condition varies a great deal according to the literature. In the Göttingen Clinic, there were eight cases in 4,200 deliveries, or a ratio of one to 525 births. Schuchard reports sixteen cases in 12,055 deliveries, or a ratio of one to 753. Kleinhans reports seven cases occurring in 11,254 deliveries, or a ratio of one to 1,600. Von Winkel reports eight cases in 15,000 deliveries, or a ratio of one to 1,875 deliveries.

The course of labor is premature in a large percentage of cases. If at term, the course depends upon the size of the fetal head. Spontaneous birth of a hydrocephalic child is only possible when it is of a slight, or at the best, of a medium degree of severity. In the higher grades this can only occur if the fetus is already dead or macerated, or if the hydrocephalus burst spontaneously. Such a rupture has been observed most frequently in breech presentations. The presentation is cephalic in a majority of cases of hydrocephalus, although pelvic presentations are frequently observed, occurring in about 29 per cent. of cases. Cephalic presentation occurred sixteen times out of twenty-two cases reported from the Königsberg Clinic by Hammerschlag. Of twenty-two cases reported by Hohl, sixty-two were cephalic and fifteen pelvic presentations. Almost all the cases running an unfavorable course for the mother are those in which the hydrocephalus presents by the head, due to the fact that the lower uterine segment is more easily thinned out in this type of presentation, and progress is much slower, if it occurs at all. Spontaneous birth of the hydrocephalic head occurs more easily in breech cases. The variety of presentation of the head is also of importance in regard to the progress of labor. If the head engages in the pelvis with its greatest occipitofrontal diameter, that is, brow presentation, it is much more unfavorable than when it is markedly flexed and occupying an oblique diameter, when molding can occur. Clinically, the fact has been well established that it is not the most marked forms of hydrocephalus which give rise to the greatest difficulties during delivery, for these may mold sufficiently or burst spontaneously but the moderate degrees cause marked dystocia.

How often interference during labor is necessary in cases of hydrocephalus, the statistics of Hohl and Schuchard demonstrate. Of seventy-seven cases collected by Hohl, artificial aid was necessary for the termination of labor in sixty-three. Of seventy-three cases reported by Schuchard, there was interference in sixty-two. Of seven cases in the Prague Clinic, and nine cases reported by Veit, artificial delivery had to be used on each occasion.

Prognosis.—The importance of this complication is very evident from the following statistics. Of Hohl's seventy-seven mothers, twenty-one died. Of Schuchard's seventy-three, thirteen died. Of Veit's nine, four died. The primary cause of death was in most cases rupture of the uterus, accompanied also frequently by severe lacerations, urinary fistulae and sepsis, all of which result from the long, difficult labors, repeated examinations and the necessary operative interference. Of late, due to better asepsis, the prognosis has improved. In thirty cases

reported by Hoffman and Bertino, only two mothers died. Of eight cases in the Breslau Clinic, and eight in the Göttingen Clinic, there were no maternal deaths.

The fetal prognosis, however, is much worse. Intrauterine death occurs frequently. A large number die at or shortly after birth from the interference which the condition necessitates. Following tapping or perforation in some cases the disease is arrested and development proceeds. This outcome is rare and most children succumb in the first year to intercurrent disease or the primary trouble. Treatment of such cases as have survived in a thankless task, although temporary results do at times follow repeated lumbar puncture and antiluetic treatment. Of Schuchard's seventy-three cases where six children were born alive, one who was tapped lived six weeks. Hoffman in 1902 reported eleven cases with three children born alive. Of these two were tapped; one died immediately after birth, and the other after seven hours. In the seven cases of the Prague Clinic, the children were all stillborn.

The diagnosis of hydrocephalus during labor is not often made. In some the diagnosis is very difficult, especially in the moderate cases and where there is but little amniotic fluid. An excessively large abdomen with the head remaining unengaged above the bony inlet after good pains are present is very suggestive of hydrocephalus, provided the pelvis is normal. The parchment like crepitation of the bones of the skull said to be pathognomonic of hydrocephalus can rarely be obtained by abdominal palpation. It is more easily obtained by vaginal examination, at which time one may also note that the sutures are wide and gaping and the fontanelles large and bulging. On the other hand, cases of hydrocephalus also occur, where the skull bones are not thinned but thickened, and where no crepitation is obtained. Absence of ballottement of the fetal head and rapid fetal heart rate are at times suggestive of the diagnosis. Mistakes in diagnosis are frequent, as when hydrocephalus is falsely diagnosed as exencephalus, hernia cerebri, tumors of the breech, fetal maceration, etc. A correct diagnosis can, however, always be made by bimanual examination under anesthesia.

The treatment of this condition varies. Fritsch advises perforation of the skull with Smellie's scissors when the cervix is sufficiently dilated whether the fetus is alive or dead, followed by manual extraction. Other authors pay more attention to the life of the child in view of the fact that it is quite possible for a hydrocephalic child to remain alive after birth, even becoming cured. The use of forceps in a case of hydrocephalus is entirely rejected by some authors for the reason that the danger of slipping is too great, but conservative application is usually considered good treatment. Ahlfeld, Küstner, Von Winkel, and Olshausen recommend diminution in size of the skull by puncture with a fine trocar about six millimeters in diameter. The further progress of the delivery is then left to nature. Care is taken when the trocar is inserted not to injure the cerebral sinuses. If the child is dead, or dies later, perforation is carried out or the puncture wound enlarged and the cranioclast is employed in case expression or manual extraction is impossible. Puncture is of little value in the treatment of the aftercoming hydrocephalic head in a breech case, the child usually dying in the interim. Here perforation need only be considered, the instrument being inserted through the lateral fontanelle, foramen magnum, hard palate, etc. If the head is high up, the spinal method of Von Huevel may be used. In this method the lower cervical or dorsal portion of the spinal column is divided, the spinal canal opened and a female catheter introduced into the cranial cavity and the fluid evacuated. If spinafida be also present, it may be opened and the catheter pushed into the spinal canal. Version for delivery of a hydrocephalic child is to be regarded as distinctly contraindicated by reason of the great danger of uterine rupture.

The question may be raised as to whether there has not been too much regard paid to the life of the child. A hydrocephalus tapped during delivery and continuing to live is a great rarity. Indeed, Spiegelburg was unable to find a single case in the literature. In most cases, even when tapped, the condition tends to increase after birth with progressive idiocy and ultimate death. With these facts before us, it seems perhaps that the most rational treatment of such cases during labor is perforation with expression, manual extraction, or the use of the cranioclast to complete the delivery. A much better maternal prognosis could then be given.

Spinabifida occurs with about the same frequency as hydrocephalus. According to Chaussier and Denne, the frequency is about one in 500 to 1,000 cases. The fetal prognosis is also very poor, most of the children dying the first year after birth. According to Biedert of thirty-two cases, twenty-five died in the first week after birth. Some cases do recover following surgical treatment, leaving, however, a total

mortality of at least 50 per cent. The course of labor is usually not affected by spinabifida unless it is of the cystic type, and presentation is usually cephalic.

The remaining malformation, complete situs inversus, will not be discussed in this paper. Its rarity is assurred when Kerr in reporting 10,000 autopsies covering a period of ten years states that he saw only two cases of this condition. Bland Sutton reports one case in 3,000 abdominal sections.

The etiology of the condition is not understood. It is probably due to an inherent condition in the fertilized ovum, although Schwalbe mentions a theory that it may perhaps be explained by uniovluar twin pregnancy with the early death of one fetus, the fetus which goes on to development being the mirror image of the other. Should this be the explanation we would expect to find evidences of the early multiple pregnancy in the fetal and maternal membranes.

In conclusion I wish to state that no etiologic factor has as yet been discovered for any of the malformations present in this case. History, physical examination, and Wassermann of the mother were negative. The Wassermann taken on blood, obtained from the cord at the time of delivery, and microscopic examination of the placenta were negative. There was, however, a small tumor formation removed from the under surface of the liver of the fetus, which suggested a gummatous formation. The complete pathologic report has not yet been made. We, therefore, cannot definitely rule out lues or some other fetal meningitis, or disease. The further report of this case from the standpoint of situs inversus, will probably be made later by the Pathological Department. The mother made an entirely uneventful convalescence and was discharged from the Hospital in good condition.

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DISCUSSION.

DR. REUBEN PETERSON: The diagnosis of hydrocephalus is difficult in most cases, except where the accumulation of fluid within the fetal skull is considerable. Even here the condition may be mistaken for some other condition, since the large size of the head makes palpation from below difficult, as the head is apt to remain high up in the pelvis. The diagnosis is less difficult in moderate degrees of hydrocephalus such as in this case where the bones of the fetal skull were distinctly separated and quite movable.

We were very careful in the application of the forceps, bearing in mind the danger of slipping in such a condition. Excessive traction was also avoided since hydrocephalus is notable for its tendency towards a thinning of the lower uterine segment after some hours of labor. Many cases of uterine rupture have followed the injudicious use of forceps in these cases.

After the prolapse and replacement of the cord and the death of the fetus I did not hesitate to perform craniotomy since it was clearly indicated and easily performed. It is a most unsurgical procedure and poor obstetrics to attempt to pull the large head of a dead child through the pelvis and soft parts of the mother without first diminishing the size of the head. Failure to realize this has resulted in great and unnecessary mutilation of the mother. The sooner we realize this and increase the indications of craniotomy especially on the dead fetus, the better will be the obstetrics of the country.

The results so far as the hydrocephalic child is concerned are extremely unfavorable. My position is something like this: if the mother's life or health be not endangered, I would not in any way injure the living hydrocephalic fetus. However, the chances of doing anything for hydrocephalic children are so poor that I do not think it justifiable to add to the obstetric septic dangers of the mother in any way in order to attempt to save children where the primary and ultimate prognosis is so poor.

As regards situs inversus I have had a number of cases in laparotomies performed during the past twenty years. None of these was diagnosed prior to operation, although it is only fair to state that they occurred before the present careful physical examinations were made prior to the operations. This would lead one to suspect that the condition is far more common than is generally supposed.

DR. RUDOLPH A. BARTHOLOMEW: I think this case illustrates the fact that where we have failure of labor to progress we do not have to depend absolutely upon a vaginal examination to determine the cause. In such a case we have to consider whether it is due to inefficiency of the pains or to some abnormality of the birth canal, either in the bony or soft parts or whether it is due to some abnormality of size or position of the fetus. In this case we could rule out pretty well the fact that the failure to progress was due to inefficiency of the

pains. We could also rule out the fact that the failure to progress was due to abnormality of the birth canal for the bony and soft parts apparently were normal. We had then to consider whether there was something responsible on the part of the child. A careful abdominal examination in this case or in any case is important to make out whether the child is in the proper state of flexion. In this case we determined very definitely that the cephalic prominence was on the side on which the back was and not on the opposite side as it should be. That was the first thing which indicated some abnormality.

Another point of interest is that on rectal examination the large fontanelle could be detected lying directly over the cervical opening. As soon as the head gets out of flexion to some degree the large fontanelle tends to be applied more and more over the cervical opening. The character of the fontanelle in this case was also significant, although we did not appreciate that at the time as much as we should have. The large size of it and the very great movability of the bones in a case where we could not hear the fetal heart would have suggested at once a macerated fetus. Here it was distinctly a surprise to hear good fetal heart tones with such a fontanelle.

It is also of interest to note how easy it was to perform the craniotomy without the use of any special instruments. Where the head is lying very low in the canal it can be done very easily with the scissors alone.

COLEY'S MIXED TOXINS IN THE TREATMENT OF SARCOMATA WITH A REPORT OF FOUR CASES OF OSTEOSARCOMA TREATED BY THIS METHOD.

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(From the Surgical Clinic, University Hospital, Ann Arbor, Michigan).

The purpose of this paper is to give in brief the circumstances which led to the adoption of "Coley's Serum" as one of the agents for treating sarcomata; together with a report of four cases of sarcoma of bone which have been treated by this method in the Surgical Clinic of this Hospital in the last eighteen months.

In 1884 Dr. Bull at a New York hospital operated four times on a patient for recurrent round celled sarcoma of the neck. Shortly after the last operation, erysipelas developed, the tumor disappeared, the patient left the hospital well and was in perfect health seven years later when last seen. Previous to this incident, Bush in 1866 had noted that occasionally an attack of erysipelas benefited a sarcoma. This fact had been observed in the seventeenth century but no practical application had been made of it. Later Billroth reported a case of sarcoma of the pharynx which was cured by an attack of facial erysipelas. It was then suggested that in inoperable cases of sarcoma, erysipelas might be established artificially. Soon Fehleisen began inoculating malignant tumors with the streptococcus of erysipelas. Dr. W. B. Coley, ignorant of these experiments of Fehleisen, was so impressed with Dr. Bull's case that he undertook a series of investigations. In 1891 he attempted to produce erysipelas in inoperable cases of sarcoma by inoculation. After numerous failures he did succeed in successfully inoculating seven minims of a bouillon culture in the skin over a tumor in the neck. In twelve hours a typical erysipelas developed. In two weeks the patient was well and remained so for eight years.

Dr. Coley collected thirty-eight cases of malignant disease in which erysipelas had occurred. Of these, eleven became well and thirteen showed marked improvement. This information led Dr. Coley to continue his experiments. He soon determined, (1) that it was hard to produce erysipelas at will: (2) the curative properties were derived from the toxic principle of the streptococcus and hence this might be utilized without an actual attack of the disease: (3) there was real danger of death from this artificially produced erysipelas. He had two deaths that year. In his defense it might be said that he was using as subjects for his investigations only those with hopelessly inoperable sarcomata.

In 1892, Coley began experimenting with the toxins and not the living germs. He soon found that injected filtered toxins produced local and constitutional reactions identical with those of an erysipelas of mild degree. Utilizing an idea obtained from some experiments by Rogers, Coley used cultures of the Bacillus Prodigiosus to intensify the action of the streptococcus.

The fluid is prepared by making a bouillon culture of the streptococcus of erysipelas, which culture is sterilized by heat. The Bacillus Prodigiosus is grown separately; it is sterilized, reduced to a dry powder and a certain amount by weight of this powder is added to each ounce of the streptococcus broth. A little glycerine and thymol are added as preservatives.

Briefly, the method of administration is as follows:

I. Begin with a hypodermatic injection of a minimum dose, usually one-fourth minim. Note this as a corollary. The more vascular the tumor the more severe the reaction. Local injection into the site of the tumor to be smaller than injection at a distance.

II. The dose is gradually increased till a chill occurs (generally one-half to two hours

PLATE I

Fig. 1. Showing condition of Tibia at time of entrance to Hospital.

Fig. 2. Showing improvement following operation.

Fig. 3. Showing Maximum Repair.

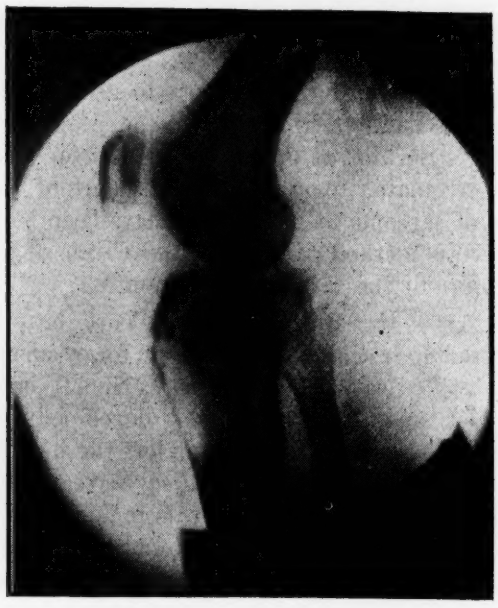

Fig. 4. Showing evidence of recurrence of the sarcoma.

CASE 1. Sarcoma of Tibia before and after use of Coley's Toxins.

after injection) followed by a temperature of 101° to 104° F.

III. If there is much depression following the reaction give the injection every other day; but if the patient can bear it, daily injections are better. The object is to get a reaction after each injection.

IV. Give tonics and keep the bowels regular.

V. If there is no improvement after four weeks, the chances are that none will occur and it may be wise to abandon the treatment.

Since 1892 Dr. Coley has treated sarcomata with these toxins alone in inoperable cases, or in connection with surgical procedures (both conservative and radical) in a very large number of cases. From time to time he has reported unreservedly the results of this treatment for malignant growths of various types. Since his investigations were reported, many other men have tried them and their experience as published agree, in the main, with those of Dr. Coley.

These results for sarcomata (to which type of neoplasm this paper is limited) may be tabulated somewhat as follows:

10 to 15 per cent. show apparently a permanent cure.

15 per cent. (circ.) show temporary local improvement.

15 per cent. (circ.) the local tumor disappears but later returns.

15 per cent. (circ.) the local tumor disappears but metastases appear.

35 to 40 per cent. show no improvement whatever.

A study of these reported results seems to justify the following conclusions:

The use of Coley's toxins does occasionally produce an alteration of the usual clinical course of sarcomata and brings about improvement and even cure.

It should be recommended in hopelessly inoperable cases. No case of sarcoma is too desperate to warrant a trial. Of such cases, 10 to 12 per cent., hopeless from any other standpoint have been successful.

In the case of sarcomata of the extremities, it should be tried for a short time (two or three weeks) before amputation. If there is prompt and marked improvement, then conservative treatment may be conducted and the limb saved. If there is no improvement, operation can be performed with even greater chances of ultimate success than if the toxins had not been first used.

The greatest value of the toxins lies in the judicious combination with conservative operative treatment. The toxins should then be administered for a considerable period of time with the hope of destroying the cells which have been left behind and so lessen the chance of local and metastatic recurrence.

Our experience in treating the four cases to be reported coincides largely with that of those who have published their results, apparent cures in seemingly hopeless cases and temporary improvement in others.

Harmer of Harvard in his report of thirty-two cases shows that five of his six cures were for sarcomata of the nose and accessory sinuses. Case four, an apparent cure, is that of an inoperable osteosarcoma of the antrum. There are practically no cases on record of sarcomata of the humerus cured by operation, even after as extreme a procedure as interscapulothoracic amputation. Yet Coley in the *Annals of Surgery* for November, 1914 reports two such cases in which curetting merely was done, the patients treated as inoperable and put on the mixed toxin treatment. One was well four years and the other fourteen years later. Our case (2) is that of sarcoma of the head of the humerus apparently cured.

The other two cases, one of sarcoma of the tibia and the other of the femur showed marked temporary improvement.

CASE REPORTS.

CASE 1. Miss T. F., a school girl, aged 17, entered the Surgical Clinic March 1, 1915, because of pain and swelling in the right knee with inability to use the limb.

Family history and past personal history are negative.

Trouble in the right knee was first noticed early in October, 1914. There is no history of trauma save for the fact that a year previously the patient had been thrown in a runaway accident and the right ankle bruised at that time. The injury healed rapidly, was never sore, and never disturbed her.

In October, 1914, the patient first noticed a pain in the right knee and tibia. This was sharp, came in paroxysms, and increased in frequency. At the time of her entrance to the Hospital the pain was practically continuous, though it was aggravated by motion. Soon after the pain started, there was noticed a swelling just below the knee on the outer side of the leg. It was tender and gradually increased in size. A radiograph was taken with the following report: "The head of the tibia is the seat of a rather absorbing process which has resulted in the loss of all details of the external

portion. The joint surface is spared. There is some swelling. No periosteal reaction, no abnormal calcification. The cortex has entirely disappeared both front and back. Evidently an infiltrative growth within the bone. Diagnosis, sarcoma." (Plate 1, Fig. 1.)

On the strength of the history, the examination and the radiograph, a diagnosis of osteosarcoma was made and an operation advised. The laboratory findings were negative. The patient was operated upon March 4, 1915. A linear incision was made over the tumor and the periosteum exposed. This was everywhere intact and the neoplasm was found to be wholly within the bone. The periosteum was incised and the tumor material removed. This was soft, vascular and cellular. The whole cortex of the bone was eroded, save for some particles still adherent to the periosteum. The cavity was packed with gauze impregnated with 1-10,000 adrenalin solution to control the hemorrhage.

The pathologic report on the specimen removed at the operation was, "Giant celled myelogenous sarcoma."

The patient reacted promptly from the operation and the next day Coley's toxins were started. The initial dose was one-fourth minim. This injection was followed in four hours by a chill and a temperature of 101.5°. The injections and the dosage were increased as rapidly as was safe according to the reaction obtained. The maximum dose of nineteen minims was given April 10, 1915, about five weeks after the operation. The patient improved rapidly, gained weight and suffered no pain.

On April 28, 1915, a second course was started. The maximum dose of twenty minims was reached in less than a month and the patient was discharged May 22, 1915. At that time the bone cavity had markedly diminished in extent and was filling in with healthy granulation tissue. There was no evidence of a recurrence and the patient was able to walk with crutches.

On June 29, 1915, the patient returned for examination. This showed the bone defect filling in nicely; there was no tenderness over the bone on pressure and no evidence of a recurrence. The X-ray showed a progressive obliteration of the bone defect with new formed osseous tissue. (Plate 1. Fig. 2.)

In August we wrote the home physician advising a third course of the Coley's toxins. This was started August 18, 1915, and was continued to a maximum dose of fifteen minims.

We saw the patient next on November 5, 1915. The general health of the girl was excellent. The wound was practically healed, and

PLATE II

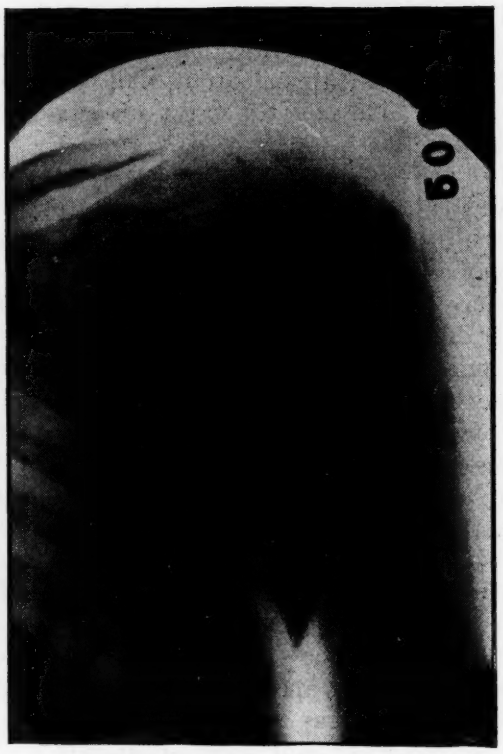

Figure 1. January 22, 1915. Before operation. Showing condition of head of humerus at time of entrance into Hospital.

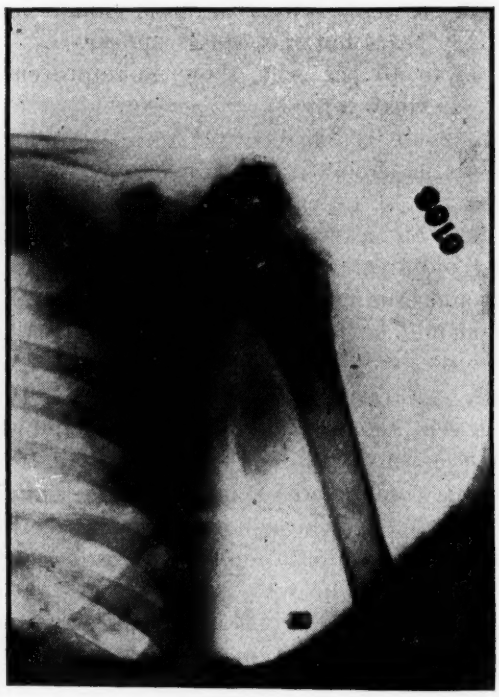

Fig. 2. Oct. 4, 1915. After operation. Showing surgical defect and complete absence of the tumor.

CASE 2. Sarcoma of the Head of the Humerus before and after treatment with Coley's Toxins.

PLATE III

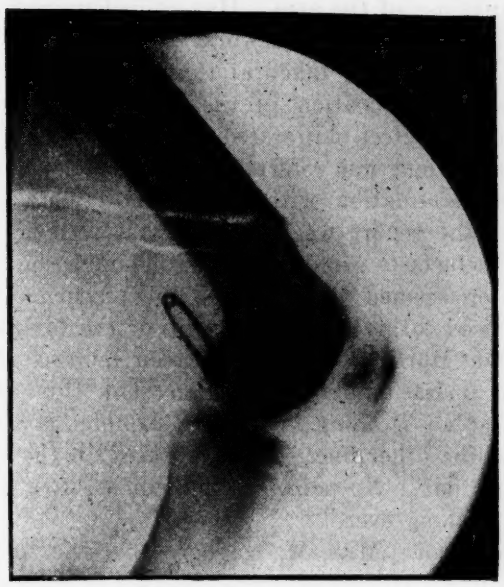

Fig. 1. August 31, 1915.. Before operation. Showing condition of Femur at time of entrance to Hospital.

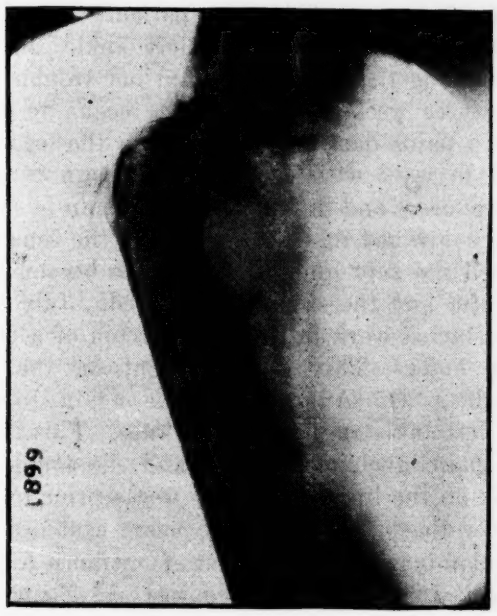

Fig. 2. January 10, 1916. Showing recurrence of the tumor at site of operation.

CASE 3. Sarcoma of the Femur before and after the use of Coley's Toxins.

the function of the limb was perfect. An X-ray picture at that time showed considerable improvement. (Plate 1, Fig. 3.)

Early in February, 1916, the patient returned for further advice. As before, an X-ray picture was taken which showed about the same condition as previously, but examination locally showed a small soft area on the anterior surface of the tibia near the level of the center of the former incision. Another course of the toxins was advised and was carried out by the home physician.

March, 1916, the patient showed much improvement. Wound practically healed and it was almost impossible to find the spot which had come under suspicion at the last examination.

I had hoped, then, that I could place this case among those which were cured by the toxin treatment, and had I given this report earlier, I might have placed it there. But a month has made a difference. April 26, 1916, Miss F. again presented herself at our request. Examination showed the wound entirely healed but examination of the suspected area showed that it had increased somewhat in extent. There was some swelling, redness of the skin and pulsation. A radiographic picture was taken and confirmed our fears. The thick sclerosing margin of the surgical defect has almost entirely disappeared; the cortex on the internal surface is much reduced in thickness. Diagnosis, "recurrent sarcoma of the head of the tibia." (Plate 1. Fig. 4.)

The patient was advised to return home for two weeks and continue the course of toxin treatment which she had interrupted to come to the Hospital. If there be no improvement at the end of this period, we will undoubtedly advise another local removal of the tumor with intensive toxin treatment here at the Hospital.

CASE 2. A. W., schoolboy, age 15, entered the University Hospital January 22, 1915, because of a swelling in the right shoulder and an inability to raise the right arm.

Family history and past personal history are wholly negative.

Present Trouble.—In April, 1914, the patient began to have pain in the right shoulder. There was no history of injury that could be recalled by either the patient or by anyone in his family. The affection was diagnosed as rheumatism and so treated. Gradually the pain became more severe and an increasing disability finally brought the patient to the Hospital.

On entrance there was noted a swelling involving the region of the head of the humerus anteriorly; there was some atrophy of the muscles of the right hand and the grasp of that hand was weaker than that of the left. A radiograph was taken and the picture was interpreted by our roentgenologist as follows: "On the external anterior surface of the head of the humerus involving both the epiphysis and the diaphysis, there is an irregular area of absorption with localized areas of calcification on both

in the center and the periphery extending well out toward the integument. The head of the bone is considerably enlarged with practically no wasting of the shaft of the humerus distal to the pathology. Diagnosis: Sarcoma of the head of the humerus." (Plate II. Fig. 1.)

Blood examination showed Hgb. 90. Reds, 4,900,000. Whites, 7,500. Urine negative. A probable diagnosis was made of sarcoma of the head of the humerus and operation advised.

The patient was operated upon January 29, 1915. An incision was made over the deltoid muscle down to the bone and a large cavity covered by a mere shell of bone was discovered. This was opened and a soft medullary, vascular tumor mass was removed. The wound was packed with gauze.

This specimen was examined by the pathologist and the following report returned: "Myelogenous sarcoma. Great numbers of enormous giant cells in a matrix of large round epithelioid cells, probably of endothelioid origin. Prognosis not very good. Should be searched carefully for metastases."

On the third day following this operation Coley's toxin treatment was started. The initial dose was one-fourth minim. Four hours after the injection the temperature rose to 103.6°, pulse 120, respirations 22. The temperature reached normal the next day. The same dose was repeated three times with the same result. A fourth and fifth time the same dose was given with but slight reaction. Then it was deemed safe to increase the dosage. On the fourteenth day after the operation the dose of one minim was reached. Following this the serum was increased one minim at a time and was given every day, or every other day according to the reaction to a maximum dose of nineteen minims.

The wound was dressed daily and improved rapidly. The bone cavity narrowed more and more with seemingly healthy granulations. The patient was discharged March 17, 1915, to be treated by the home physician who co-operated finely. The wound was dressed as we directed and a second course of the serum was given.

June 15, 1915, the doctor wrote as follows: "The wound has healed nicely and the patient is in good health and is getting the use of the arm. There is no pain and the arm is nearly as large as the other."

In September, 1915, we wrote for further information to the physician who sent the patient to us for our examination on October 4, 1915. Examination on that date showed a perfectly healed scar on the right shoulder. "Motion of the shoulder is only slightly limited. There is no pain. The patient has full functional use of the arm. Has gained weight and is doing regular farm work."

A radiograph taken at that time showed excessive calcification in the head of the bone, and the defect obliterated. (Plate II, Fig. 2.) The patient was referred to the Medical Clinic for examination with reference to metastases and the report was returned that no evidence of metastases could be found. Though the condition seemed wholly cured the physician was advised to give another course of the toxins.

On March 20, 1916, fourteen months after the operation, the physician sent this note. "The boy is doing fine. The shoulder is about like the other one. He is working in the mill every day. No pain, and he can use it almost as well as ever."

CASE 3. Miss M. G., age 18, came to the Hospital August 31, 1915, because of pain and swelling in the left knee.

Family history and personal history are negative.

In February, 1915, the patient slipped on some ice and turned her left ankle thereby wrenching the knee. This did not trouble her till three weeks later when she began to have sharp pains darting up and down the leg, and had to walk with a limp. The pain became more severe and in May the knee began to swell. She continued in school but when the semester ended she kept quiet and the knee became less painful and the swelling decreased. July first she started work in the dining room of a summer hotel. This work brought on the old trouble. On August first she again turned her left ankle and twisted the knee. This made the pain much more severe and she could not walk on the limb. For four weeks prior to entrance the patient had been using crutches.

Examination at the time of entrance to the Hospital showed a swelling just above and external to the knee joint, rather firm, smooth and tender. The blood count was about normal and urine was negative. The X-ray report was as follows: "There is an almost exactly spherical shadow about the size of an orange on the lateral aspect of the knee, central just over the external condyle. It has produced decalcification and absorption of the shaft for about one-half its diameter. The external condyle is almost completely decalcified. There is almost no tissue reaction, a mere suggestion of calcification along one edge. Diagnosis: Evidently some neoplasm, presumably sarcoma." (Plate III. Fig. 1.)

The patient was operated in the Surgical Clinic, September 4, 1915, under ether. A longitudinal incision was made over the tumor and the mass exposed. The periosteum was incised and the tumor removed. The material was very soft and friable and its removal was accompanied by profuse hemorrhage. The cavity was found to extend nearly through the bone. It was swabbed with a half per cent. formalin solution and packed with gauze. The pathologic report on the specimen removed was, "Giant cell, spindle cell, myelogenous sarcoma. Much necrosis."

The patient rallied promptly from the operation except that she ran a rapid pulse for several days for which condition tincture of digitalis was administered. Coley's toxins were started on the second day after the operation with the usual initial dose of one-fourth minim. The maximum dose of twenty minums was reached on the fortieth day after the operation, the average interval of doses thus being one every other day.

A second radiograph, taken November 9, 1915, showed very little change, and little evidence of a reparative process. Clinically the skin incision healed well but the bone cavity did not granulate in as was hoped.

On November 10, 1915, a month after the completion of the first course, a new course of toxin treatment was begun with an initial dose of one minim. The patient seemed to react more severely to this second course and it could not be given so rapidly as before. The most marked reaction was obtained at the ten minim dose when the temperature reached 105.1°. The temperature promptly fell and reached normal the next day. The last dose was given January 15, 1916.

In the meantime, during the second week in January a change was noted. At the lower angle of the wound there began to protrude what at first seemed like granulation tissue. But it grew rapidly, and on palpation it was soft and pulsating. We became suspicious of it and a small portion was removed on January 11 for pathologic diagnosis. The report came back, "Giant celled sarcoma with pyogenic infection. One part of the sarcoma seems to be rapidly proliferating." A third radiograph on January 10, 1916, showed considerable progress in the erosion with no evidence of a reconstructive process. (Plate III. Fig. 2). Examination a few days later showed a marked increase in the size of the tumor. From this weight of evidence it was decided to perform a radical operation, and a hip joint amputation was done on January 17, 1916.

Macroscopic examination of the limb after operation showed that the tumor had extended to the surface of the cartilage covering the external condyle of the femur. It had infiltrated the soft parts along the external ligament to the head of the fibula. Of the lower end of the femur internal to the tumor there was left but a thin shell of bone which was easily crushed. The tumor extended posteriorly into the soft parts to within one-quarter inch of the popliteal vessels.

The patient's convalescence was uneventful and she was discharged March 13, 1916, with the stump entirely healed, general health excellent and with no sign of recurrence.

CASE 4. Mrs. C. S., age 58. Transferred from the Otolaryngologic Clinic, July 24, 1914. The patient came because of swelling of the left side of the face. The family and past personal history are wholly negative.

In March, 1914, after a long drive in the cold, the patient noticed a pain in the left side of the upper lip. This grew worse and became neuralgic in character. A month later a swelling began to appear beneath the left eye. This was poulticed without effect. A doctor was consulted early in May and he gave her two X-ray treatments. The tumor grew larger and the patient was referred to a specialist who curetted the antrum of Highmore and sent a specimen of the curettings to Ann Arbor where a diagnosis of "Osteosarcoma" was made. During July, strong X-ray treatments were given with no improvement.

Examination on her entrance to this Hospital revealed the following condition: "The left cheek is occupied by a firm, dense smooth tumor apparently appearing through the anterior wall of the antrum and infiltrating the cheek tissues to the angle of the jaw. There is some exophthalmos. The skin of the cheek is raised by the tumor to the level of the nose, is edematous, red and congested. The tumor is hard and immovable. The lateral wall of the nose is pushed forward so as to come in contact with the septum." A diagnosis of inoperable osteosarcoma was made and the Coley toxins advised.

The initial dose of one-fourth minim was given July 27, 1914. It was then decided to ligate the carotid artery on that side to lessen the blood supply to the tumor and on July 30, the left common carotid artery was ligated. Two days later the "Serum" treatment was recommenced. The patient showed no particular reaction till a dose of eight minims was

reached. The most marked effect was obtained at the last dose of fifteen minims when the temperature reached 104.6°. The patient was discharged September 13, 1914. The tumor was somewhat lessened in size, the left eye was normal and the patient had gained in weight and strength.

The toxin treatment was continued at home by the patient's physician. The following is his report of the treatment:

"September 24, 1914, the initial dose of one minim was given. Daily injections for two weeks, then every other day or so till November 24. Then courses of a few days' treatments followed by a few days' rest. From September, 1914 to March, 1915 fifty-six injections were given. Then at longer intervals to August, 1915."

A letter from the doctor dated November 9, 1914, says, "Mrs. S. is still progressing finely. Her face is normal except for some redness and hardness due to chronic inflammation."

A communication from this same physician October 8, 1915, almost a year later, states that there is no sign of a recurrence. The doctor further says that the patient has asked him to produce some fresh serum and use it. It is rather unusual, we find, for a patient once all signs of disease are gone to be willing or eager to continue treatment over such an extended period of time.

CONCLUSIONS.

Our experience, as indicated by these four cases, seems to justify us in using Coley's mixed toxins as recommended by the man who has given his name to the fluid.

One patient with sarcoma of the antrum, patently inoperable, who had been given a course of X-ray treatments without improvement by a man who is acknowledged to be an expert in his line, is now well for over twenty months.

Another patient with sarcoma of the head of the humerus, also clinically inoperable, is well a year later, apparently cured and still possessed of his arm.

In the third case, the growth of the tumor was delayed, the health of the patient was greatly improved and the subsequent operation was unusually well borne.

In the fourth case the patient is in good health more than a year later with no evidence of metastases. Unfortunately there is now distinct evidence of a local recurrence. But the general health of the patient is much improved, and if a second operation or if amputation even is indicated later, the chances for a much more favorable and permanent result have been increased.

DISCUSSION.

DR. WALTER A. HOYT: We have tried to be fair in our estimate of the value of these toxins and not to be overenthusiastic. From our experience we think we are justified in continuing their use especially in the inoperable cases or in operable cases where it seems possible to carry out the toxin treatment.

Another very striking point in these cases, is the variability of the results. I was very much interested when the Detroit Surgical Society met in Ann Arbor to hear the different viewpoints. Some men had had several cases of permanent cures, others had never had a case cured. Probably this is due to the use of the toxins, in different varieties of cases. We never consider its use in periosteal sarcoma. This variety, we feel, is purely surgical and an amputation where possible should be carried out immediately. In operable sarcoma of a soft part we have used it in several cases but it has been after operative treatment. Dr. Darling has a case in his private practice of lymphosarcoma. This patient has now been under treatment for two years and a half, has had three different operations, one in which glands were removed from the inguinal region, followed by Coley's toxins. About a year ago this patient came back with a similar mass in the axilla. This was removed with no evidence of metastasis. The patient is well at the present time.

It is important to note that a few years ago it was thought to be criminal to temporize with a sarcoma of this nature. It is interesting to see in the reported cases that metastases from this type of tumor are not very common. There has been considerable argument of late as to the malignancy of giant cell sarcoma and a good many men now claim that giant cell sarcoma is not malignant as compared to the other forms. We have tried other cases besides these four reported, but unfortunately haven't good records. I believe the reason that there are not better results is because they are not followed up by prolonged treatment.

Why Coley's toxins do good is still a mooted question. It is possible that other vaccines would do just as well as Coley's toxins. There has been quite a little work with typhoid where results have been as good after the use of other than the typhoid serum. We had a case of actinomycosis of the abdomen and we gave the man some Coley's toxins intravenously. He had previously been running a temperature of 101 to 102°. The smallest dose of Coley's toxins gave us a typical Coley's toxin reaction. His temperature which was previously high has dropped down and he now has a normal temperature. This is simply working in the dark, but it is interesting. We believe it should be used in all cases of sarcoma, either with or without operation.

DR. WILLIAM LYON: I want to mention a single case of sarcoma treated by Coley's toxins which I had in my practice ten years ago. It was an

interesting case in that it was extremely severe, being a sarcoma apparently involving the ileum and the head of the femur. The patient was in an exceedingly bad condition when I first saw her. She was a woman of forty and had been suffering from so-called rheumatism of the hip for some months. She was quite emaciated and had a marked anemia. Two surgeons decided that it was wholly inoperable and advised Coley's toxins. This patient could not tolerate at any time more than four minims. The first dose of one-quarter minim gave a marked reaction. By the thirtieth dose we had arrived at two minims, still getting reactions so severe that the patient seemed about to die several times. At this time there was a rather rapid enlargement of the mass, the skin over it became reddened and an abscess developed from which we evacuated about thirty ounces of pus. This left a very ragged nasty cavity which was filled with bismuth paste and finally healed. After about five or six weeks of treatment the patient in turning over in bed produced a fracture of the femur. Now after ten years the woman is in perfect health, weight one hundred sixty pounds with decided shortening of the femur but with no sign of a recurrence.

EIGHT YEARS IN THE DEPARTMENT OF INTERNAL MEDICINE.

ALBION WALTER HEWLETT, M.D.
Professor of Internal Medicine, University of Michigan.

On assuming duties at a new university the professor is often expected to review the general problems of his subject and to outline his plans for the future of his new department. His views are of necessity based largely upon his past experiences. While the latter are usually of personal interest only, it has seemed to me that certain developments during the past eight years in the Department of Internal Medicine might also be of general interest. These years have witnessed an extraordinary growth in our University Hospital, a growth which has established the proposition that in this country, as in Germany, a large university hospital can be developed in a small city. The past eight years have also been noteworthy by reason of the wide discussions as to the social aspects of medicine and the duties and obligations of those who teach its clinical branches, particularly with respect to research on the one hand and to private practice on the other. Any actual attempts to solve these problems are worthy of record.

It is not my purpose to discuss the earlier history of the University Hospital. The clinical facilities of the earlier days appear meager enough to one at the present time and the tenacious adherence to these facilities despite the temptation to remove the clinical work to Detroit seems justified now, not alone by the anticipated growth of the Hospital, but also by the fact that in those early days medical education in the country at large was carried on mainly by didactic lectures rather than by personal instruction at the bed side. At the present time the university which contemplates the establishment of clinical work in a small university city may well pause before the early history of Michigan's University Hospital. At the same time, however, it may receive encouragement from the fact that in the western states, at least, the public has been educated to the view that a medical center, whether public or private, can be successfully operated in a small city and that patients are willing to travel considerable distances in order to receive expert medical attention.

In 1908 the University Hospital had already reached dimensions which justified the hopes of those who had looked forward to a clinical center in Ann Arbor. Its growth since that time has shown beyond all doubt that so far as size is concerned the future of the Hospital is secure.

It is apparent from these figures that the growth of the combined departments of internal medicine, pediatrics and infectious diseases has kept pace with that of the Hospital in general and that approximately one-fourth of all patients coming to the Hospital are seen at some time by the staff of these departments.

In 1908 the services in pediatrics and in contagious diseases were numerically deficient when compared with other services in the Hospital. Thanks, however, to the direction of Dr. Cowie, to the enactment of state laws making it possible to send more children to the Hospital at the expense of the county or state, and to the generosity of the city of Ann Arbor in providing a contagious ward for the Hospital, the numerical deficiency in these classes of patients is being remedied and one may safely predict that in the future our students will have little cause to complain of lack of material in either pediatrics or the contagious diseases.

From the social standpoint the chief function of the University Hospital is to provide expert and specialized medical services for those persons who cannot well afford the cost of similar service elsewhere. The legislature of Michigan has enacted laws whereby indigent patients, capable of being helped by expert service, can be sent to the University Hospital for treatment, the cost being charged back to the county or to the state. It is not the indigent alone, however, who stand in need of expert medical

attention. The remark has often been made that the very rich and the very poor receive the best medical attention; the former because they can well afford to employ the most expert specialists, the latter because the modern charitable hospital is usually one where expert service is rendered. The person of moderate means, however, only too frequently gets along without highly specialized services. On the one hand he is too proud to be an object of charity while on the other he is unable or unwilling to pay the fees necessary for specialized service. And yet it is evident from the standpoint of the community that this class of patients should be given the best possible medical service, for under conditions of health they are self supporting and valuable workers, whereas if broken in health their small capital soon makes them a burden either to the family or to the community at large. The clientele of the University Hospital is derived very largely from just this social class; persons who are trying to husband a slender capital in the face of serious or chronic illness. In caring for these patients, it seems to me, the University Hospital has become an important factor in the broad social problems of the state and in the future it will doubtlessly play an even more important role than in the past.

From the standpoint of internal medicine the service which must be rendered is, first of all, based in large part upon the special examinations which are now possible in any good medical center but which can be obtained elsewhere only with considerable difficulty and often at considerable expense. These examinations include microscopic and chemical examinations of the blood, the stomach contents and the excreta, cardiographic records, bacteriologic and serologic examinations, and study by means of the X-ray. With these aids it is frequently possible to arrive at conclusions which would otherwise be impossible. Having made a diagnosis, the question remains whether a patient can be benefited by treatment at the Hospital. If not, he is usually returned to the care of his home physician to whom a letter is written in which the results of the examination are indicated and further treatment suggested.

During the earlier years of my connection with the Hospital the medical wards were rarely crowded and patients presenting special diagnostic difficulties were advised to enter the Hospital for a careful examination. The routine hospital records and the examination by a group of student and graduate assistants furnished data upon which a diagnosis could be based. During the past year, however, the medical wards have frequently been very crowded, partly because larger numbers are coming to the Hospital and partly because the number of seriously ill patients who must be kept in the wards for longer periods of time has also increased. For this reason the plan of admitting patients for diagnostic purposes is gradually becoming more difficult. This fact is evident in the above chart of admissions where it will be noted that while the total numbers coming to the department have steadily increased the number of in-patients has remained practically constant for the past four years. In order to render an efficient diagnostic service in the future it will be necessary either to increase the number of beds at the disposal of the department or to reorganize

GROWTH OF THE UNIVERSITY HOSPITAL AND OF THE DEPARTMENT OF INTERNAL MEDICINE DURING EIGHT YEARS.

Year	Total Patients coming to the Hospital	In-patients Internal Medicine Proper	All patients Internal Medicine Proper‡	All Patients Pediatrics and Infectious Diseases	Sum Total in Department
1907-08	3,727		740	101	841
1908-09	4,259	384	877	123	1000
1909-10	4,856	477	1122	205	1327
1910-11	5,362	531	1249	102	1351
1911-12	5,285	624	1341	218	1559
1912-13	6,803	750	1574	229	1803
1913-14	8,027	847	1653	359	2012
1914-15	9,050	792	1792	545	2337
1915-16†	11,100	740	2000	645	2645

†Figures for June 1916 are estimated.

‡Includes inpatients, outpatients and referred patients.

the out-patient service in such a manner that out-patients can be submitted to a fuller routine examination by a group of assistants.

According to modern standards, the university clinic should devote itself not only to teaching and to the care of patients, but it should also be a center for testing new methods of diagnosis and treatment and for the scientific study of disease. The clinic which is not adding to the sum total of medical knowledge is already falling in the rear. In order to perform this important function two requisites are necessary. In the first place members of the clinical staff must devote a portion of their time to research; in the second place facilities for such research must be furnished by the Hospital or by the University. It is becoming evident that if the members of the clinical staff are to do research in addition to their hospital and teaching duties, there will be relatively little time left for private practice. During the past eight years the members of the staff of internal medicine proper have been restricted in private practice to the extent that no private offices have been opened in the business district of the city. The plan has proved effective in centering the major interest of the staff upon hospital and university duties. Two disadvantages of the plan have become apparent. In the first place it has not been possible to pay the assistants sufficiently large salaries to retain them for an indefinite period with the University. After a few years they must look for some more remunerative positions elsewhere. In the second place, owing to the absence of private wards in the Hospital, the assistants are to a great extent deprived of the experience that comes from contact with private patients. Attention to the relief of minor and seemingly unimportant complaints, personal interest in the patient as an individual and adjustment of ones self to the views of the patient or of his family are too often neglected, even when the staff member is one possessing high ideals and great consideration for others. These objections to the plan followed do not, to my mind, outweigh the advantage of having the staff devote its main energies to university duties. It may be pointed out, however, that where a private ward is attached to the hospital the older assistants are able to increase their incomes and to gain experience in handling private patients without at the same time sacrificing an unnecessary amount of time. This plan has been tried at the Barnes Hospital in St. Louis and at the Peter Bent Brigham Hospital in Boston.

From the standpoint of the students also there is a disadvantage in bringing them in contact solely with men who devote themselves to the scientific side of medicine. Fortunately this difficulty can easily be overcome by having on the staff certain men who are engaged in private practice. Associated with my department for example is an instructor in therapeutics who is thus engaged.

It seems evident that men who are willing to devote their best years to the university side of medicine should be provided with adequate facilities for study and research. The problems confronting internal medicine at the present day involve not alone the usual clinical observation of patients but the study of these patients by the various methods that have been developed in biochemistry, physiology, bacteriology and immunology. These methods are often costly both in time and money and they require laboratory space, special apparatus and the services of technical assistants. Without these facilities such work can be carried on only under considerable difficulties.

Herein it seems to me has been the most serious defect in my department. Our facilities for the study of cardiovascular disease have been excellent but only beginnings have been made along other lines. The growth of the Hospital has been so rapid and the demands for more beds and for a larger staff of physicians and nurses so insistent that requests for larger and more efficient laboratories must often have seemed trivial. But we should remember that size is only one factor in the constitution of a great clinic. In the leading clinics new ideas are being originated or having originated elsewhere are being tested; and at the present day, so far as internal medicine is concerned. this means work in a clinical laboratory equip ped for chemical, bacteriologic and physiologic work. The University Hospital has reached a size that is adequate or nearly adequate for its university purposes, and it seems to me that the time is at hand when more effort should be made toward its development as a center of clinical research. In the appointment of my successor a step in this direction has been made. Dr. Foster has made important contributions in applying the methods and data of biochemistry to the solution of clinical problems and he is to have a chemical laboratory connected with his service. It seems to me that further encouragement to this and to similar lines of development must be given, if Michigan is to keep pace with the leaders in clinical medicine.

I cannot close without expressing my appre-

ciation of the work and devotion of those who have been associated with me in the department for the past eight years. One feels a special responsibility for men who spend a number of years in the department and one follows their future careers with peculiar interest. Of those who have been instructors in the department during the past eight years, Dr. Van Zwaluwenburg has become professor of roentgenology at this University, Dr. Warren has become professor of medicine at the Long Island Medical School, Dr. Agnew is professor of Medicine at Alabama, Dr. Schmidt is to enter practice in Detroit, while Dr. Wilson and Dr. Gilbert are to remain under my successor. To develop leaders is surely one function of the University and any reputation which may come to Michigan from such development lies in the hands of these and of similar men in other departments, who have spent a number of years at the Hospital.

DEMONSTRATION OF A CASE OF LUPUS VULGARIS.

UDO J. WILE, M.D.
(From the Clinic of Dermatology and Syphilology, University Hospital, Ann Arbor, Michigan).

The case which I wish to demonstrate is one of rather more than usual interest in view of the fact that the condition it illustrates is rather rare in this country, although common enough in certain parts of Europe. It is a case of extensive lupus vulgaris with extreme destruction of the nose and neighboring parts of the cheek.

Lupus vulgaris was introduced into this country probably from Southern Europe. The cases are sufficiently rare here to excite more than usual interest. Abroad they hardly are worth presenting at a society. The the St. Louis Hospital in Paris which has 1200 beds for the treatment of cutaneous diseases and syphilis, almost every nurse and attendant is an old case of lupus, some of them never leaving the grounds.

There is probably no other granulomatous or malignant disease in which greater destruction is commensurate with general good health. There are cases in which the orbits are invaded, nose entirely eroded, mouth replaced by a small opening surrounded by a very dense scar tissue, the ears gone, yet the general health is conserved.

Association of visceral tuberculosis with lupus is relatively uncommon and one can say conversely that in the various sanatoria for pulmonary tuberculosis, lupus vulgaris is exceedingly rare as a complication or concomitant finding. At the Adirondack Cottage Sanatorium and at Saranec Lake Village where there are some 15,000 people all of whom are tubercular, there was not during the year 1908 a single case of lupus vulgaris. Association with bone tuberculosis occasionally occurs and if one were to examine these patients very carefully it is not unlikely that tuberculosis might be found clinically without subjective findings.

The question arises whether lupus is exogenous or whether it comes from the blood stream. The peculiar predilection of lupus for the face, also for the nose, sides of the cheeks and localization and isolation at that particular place make it seem unlikely that there is a hematogenous source of infection. On the other hand, we not infrequently see lupus vulgaris in places where the process is found incading the entire body. In such cases we must assume a hematogenous infection. Both methods probably occur. Exogenous origin is considered the most common source today for cases of lupus with isolated lesions.

This girl visited this clinic three years ago with an active lupus vulgaris on both sides of the face which had eroded most of the nose. She is Finnish which is a point of interest because lupus vulgaris is found commonly in Finland. The case, of course, could not have been operated upon. The destruction had already occurred, the disease was far advanced and was spreading. We placed the patient on appropriate hygenic measures. She improved rapidly, was given increased doses of tuberculin and the lesion was curetted and cauterized. After four to six months residence in the Hospital the patient was returned with a false nose to her county in a very good condition and with an excellent cosmetic result. She returns now with the disease in exactly the same location and growing more rapidly and more extensive.

The disease is very successfully combatted so far as checking it is concerned in countries where the condition is more commonly seen, by phototherapy, that is, by the Finsen light, the common carbon light cooled by having a constant flow of water passing between the source of the light and a lens which is closely applied to the affected parts. The ideal cosmetic results are obtained with this light. They, however, require a daily exposure to a small area the size of half a dollar for one hour. This requires a special apparatus and a special nurse to give the treatment. In clinics where the condition is common, long tables are arranged with the

lights overhead and a nurse has charge of one of these tables and takes care of the pressure and change of position of the light as the patients lie for treatment.

In examining the profile of this patient one

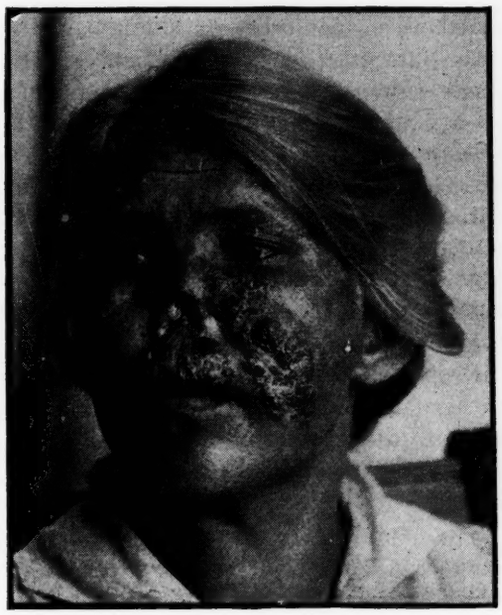

Fig. 1. A Case of Lupus Vulgaris.

sees that the cartilaginous portion of the nose has been eroded. That is characteristic of lupus and not so characteristic of lues. A lues of this extent would most surely have eroded a good deal of bone and sequestrated a large part of the bony septum. Then one can also see the progress of the disease from without inward whereas in lues in such cases it is from within outward. The differential diagnosis is very difficult in those cases in which the disease occurs in hereditary specific individuals, a combination of syphilis and tuberculosis occurring together.

This is not the ulcerative type of lupus but is a dry form. The process is very slow in its progress. The malformation and facies are absolutely typical.

DISCUSSION.

DR. REUBEN PETERSON: What will be the outcome?

DR. WILE: Very slow progression with mucous membranes involvement. The prognosis for life is excellent. Gradually the process will involve the orbit and the ear. When it reaches the ear it spreads very rapidly and invades the middle ear.

RESOLUTIONS ON THE RESIGNATION OF ALBION WALTER HEWLETT, PROFESSOR OF MEDICINE, UNIVERSITY OF MICHIGAN.

This year has seen the last association of this Society with Dr. A. W. Hewlett as an active member. During his eight years of service Dr. Hewlett has built up a splendid clinic in the University Hospital, and by his efforts and the participation of his assistants has contributed to the brilliant success of the Department of Internal Medicine.

Be it resolved, therefore, that the Society express to Dr. Hewlett its great regret at his leaving and at the same time extend to him its best wishes for his continued success at his new post.

Moved and carried that this resolution be preserved on the records of the Society, printed in the *Journal of the Michigan State Medical Society* and a copy hereof sent to Dr. Hewlett.

A Study of "Uterine" Drugs.—Dr. J. D. Pilcher, W. R. Delzell and G. E. Burman, working in the Pharmacologic Laboratory of the University of Nebraska Medical School, have studied the action on the excised guinea pig uterus of a number of drugs which are constituents of proprietary and "patent female" remedies, drugs for the value of which there is little evidence and which would have fallen into disuse but for their exploitation. The following drugs lessened the amplitude of the contractions of the uterine strips, or in stronger solutions caused a complete cessation: Unicorn root, pulsatilla, Jamaica dogwood and figwort. Somewhat less active were valerian and lady's slipper. The drugs having very weak actions were wild yam, life root and skull-cap. Blue cohosh was most active and put uterine strips in a state of tonic contraction or tetanus. The following drugs were quite inactive: black haw, cramp bark, squaw vine, chestnut bark, false unicorn, passion flower, blessed thistle, St. Mary's thistle and motherwort. The authors are confident that the actions observed would also be produced in the intact human uterus provided the drug reached the uterus in a similar concentration but that it is improbable that the concentration of drug used could ever be attained in the body. Work which is under way indicates that these drugs do not act specifically on the uterus but on smooth muscle in general and that this general action would overbalance any favorable action on the uterus. The authors conclude that the drugs examined are practically worthless and that their use is harmful as well as futile since such use tends to perpetuate therapeutic fallacies (*Jour. A.M.A.*, Aug. 12, 1916, p. 490).

Radio-Rem.—The Council on Pharmacy and Chemistry reports that those who are well informed on the subject of radium therapy are of the opinion that the administration of small amounts of radium emanation, such as those generated by certain outfits, is without therapeutic value. Having voted not to admit to New and Nonofficial Remedies any radium emanation generator which produces less than two microcuries of emanation during twenty-four hours, the council voted not to accept Radio-Rem outfit No. 3, Radio-Rem outfit No. 2 and Radio-Rem outfit C., each of which is admitted to produce less than two microcuries of emanation per day. (*Jour. A.M.A.*, Aug. 19, 1916, p. 631).

The Journal
OF THE
Michigan State Medical Society
ISSUED MONTHLY UNDER THE DIRECTION OF THE COUNCIL

EDITOR
FREDERICK C. WARNSHUIS, M.D., F.A.C.S.
Grand Rapids, Mich.

All communications relative to exchanges, books for review, manuscripts, news, advertising, and subscription are to be addressed to Frederick C. Warnshuis, M.D., Powers Theatre Building, Grand Rapids, Mich.

The Society does not hold itself responsible for opinions expressed in original papers, discussions, communications, or advertisements.

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October.

Editorials

INFANTILE PARALYSIS.

We recognize that the city of New York and vicinity and in some of the other eastern communities the epidemic of infantile paralysis has been a matter of serious moment and concern. Health authorities and civic officials were confronted with a formidable task to arrest its spread and to effectively cope with the perplexing problems that presented. Newspaper reports of the number of cases, deaths and extension of the disease were characterized with "scare-heads," reporter's "playing-up" features and conjectures. These newspaper stories were the means of striking fear to many a mother's heart and needlessly created many anxious days and weeks of intensive watching for the first symptoms of the disease in her children. American-like, reporters in communities far distant from New York, called up their local physicians inquiring whether any cases of the disease had appeared in their vicinity. Finding none they would seek to incite local interest by publishing interviews with local health officers and after enumerating symptoms, etc., they would publish more "gush" as to how Health Officer "So and So," or, the Local Board of Health were feverishly awaiting the report of the first local case and the steps that would be taken to prevent the spread of the disease. Then there would follow advice, preventive measures, etc., etc., and for days local interest would be stimulated and parent's fears for their offspring's welfare aroused. If Johnny wakened at 2 a. m. with a "stomach-ache" (due to unwise indulgence) the doctor must come because the fear existed that Johnny might be coming down with infantile paralysis. From the clippings received we do not believe a single community in this state escaped such experiences nor did a single newspaper refrain from using an unnecessary amount of ink on bold face type. We regret also that some of our doctors, eager to pose before his community as an alert diagnostitian, were eager to be the first to discover a case in their practice. In his eagerness he forgot his differential diagnosis and under the "spell" pronounced a case of meningitis of other etiologic origin as infantile paralysis. As a result reports soon came of cases here and there and the newspapers burst out afresh in black type with the news that at last the disease had appeared locally and that Dr. "———" had found little Mary Jones ill with infantile paralysis. (Poor Mary had tubercular spinal meningitis). In a day or two Dr. "———" not to be outdone by his colleague, sends in a report that little Willie Brown, is a victim of infantile paralysis. Then daily from here and there came reports of cases—we wondered how many were really infantile paralysis. Now, mind, we do not assert that there were no genuine case—we believe there were, as this state has had cases reported to health officers every year and which were true instances of typical afflictions. We do assert, however, that a goodly number of the cases reported as infantile paralysis were improperly diagnosed and that Michigan had but comparatively few genuine cases. In one community we investigated five cases of what were reported by physicians to be infantile paralysis. As a result, after laboratory analysis, they were found to be: Tubercular meningitis, two cases; pneumococcus meningitis, one case; simple meningism, one case; spontaneous recovery without any findings or paralysis, one case. Five reported cases and none of them correctly diagnosed—but reported to comply with public excitation. How many more were there of similar nature? We believe further comment unnecessary. As doctors and as guardians of public health, may we strive to maintain a calm state of mind and cool, deliberative diagnostic acumen.

"WHAT OF THE WINTER?"

A heavy thunder and rain storm is raging without and in the several minutes of darkness

between extra severe crashes when the lights went out by reason of "blown-out" fuses, we were led into a musing trend of thought with the question foremost—"What of the winter?" We did not think of the deep snows, the bitter cold or the long hours of increased work. Neither were we brooding over unfilled coal-bins and empty vegetable cellars. We were, however, concerned in regard to what the spring would reveal in the way of a credit or debit record as to what we as physicians of Michigan achieved in organization work, society activities, professional advancement and professional knowledge. Would we still be traveling along in a groove or would sufficient energy manifest itself to turn us out of beaten paths and create renewed life and co-operative efforts to attain a higher plane of efficiency? Would we exhibit sufficient interest to cause an influential expression of opinion to be heeded by our legislative solons in matters of health legislation and the pursuit of a sane course in social insurance provisions? Would we devote sufficient time to fostering the objects of our county societies and the doing of our part in obtaining their realization? Would we be earnest, honest, active physicians and surgeons profiting by the experiences encountered and emerge, at the end, better and abler physicians?—What, oh what, would the winter's close and spring's awakening reveal? Who would come? Who would go? Who would profit—who would lose?

The penetrating lightning did not impart a prophetic glimpse or view and naught was revealed as to "what of the winter's" end the record would impart.

However, the distant and lessening thunder's rumble, the cricket's song and the tree-toad's croak that were wafted in as the windows were again raised, brought again new inspiration and the old confidence that come what may, the profession of Michigan would not be found wanting. We indeed urge that you who read may be actuated, by this digression, to increase your interest, your activity, your enthusiasm in your County Society, your local problems and those of your state organization. By doing so we need not pause to ask "What of the Winter?"

THE JOURNAL.

With the issuance of the November and December numbers we will have completed four years of editorial direction of *The Journal*. We believe that we have conscientiously and consistently striven to make its every issue carry something of intrinsic value and interest to our members and readers. We have striven to serve the wants and desires of the diversified interests of all. We also believe that in a measure we have succeeded but we are not by any means satisfied or content—the laurels that may have been won are not sufficient to form a soft pillow to contentedly repose upon. As a new volume will be commenced with the January issue we are appealing to our members to send us their criticisms and suggestions. Please tell us wherein we are lacking, how we may institute new features, what course should be pursued, what should be changed, what will make it more valuable to you? What do you need? What kind of articles and editorials do you want—how many in each issue? True we have had some commendations and some very pointed and just criticisms—we have tried to profit by them. They were appreciated but now we want some representative wholesome criticisms and constructive suggestions. May we not be favored by *your* opinions?

We are desirous and eager to make the next volume of distinctive interest and intrinsic value to the greatest possible number of our members. To do so successfully we solicit your co-operation and personal interest. Do we get it?

SIGNED EDITORIALS.

With the desire of causing *The Journal's* editorial pages to be representative of the opinions, viewpoints and position of the entire profession of the state we are requesting that our members submit signed editorials for publication. The restriction imposed are that these contributions must not exceed 1,500 words; they must be devoted to medical or surgical topics or those subjects that are of interest and concern to the profession. The Publication Committee will exercise its right to reject any contribution that they deem of insufficient merit or interest.

May we not have a spontaneous response to this request and thus be assisted in causing a new interest to be aroused in *The Journal* by the establishing of this new feature of editorial discussions?

CHANGE OF ADDRESS.

Secretaries and members will please address all communications to *The Journal*, Editor or Secretary to Powers Theatre Building, Grand Rapids. The offices of *The Journal* and the Secretary have been moved from 91 Monroe avenue to the above address. Kindly bear in mind this request in all future correspondence.

Editorial Comments

October- vacation days gone by—ready for work. What are you planning to do for your local Society; what are you personally going to do to make its meetings this winter yield to you and your associates a satisfactory revenue? We desire at this time to remind you that it rests solely with you to determine whether your county society will merely exist or become an active, profit sharing society.

We endeavor to keep our mailing list corrected to date from notices received of changes of residence but every month we receive a number of cards stating that *The Journal* addressed to "Dr. ———" cannot be delivered by reason of "no such number," "moved," or unknown." Then two or three months elapse before we receive a letter from the doctor asking why his *Journal* is not sent him. Please remember to inform us whenever you change your residence.

Our members are reminded that the House of Delegates increased the annual dues from $3.00 to $3.50 per year. The reasons for doing so may be found in the minutes of the last session of the Council as printed in the September issue and County Secretaries are reminded of this increase when collecting 1917 dues.

Wanted—A host for our 1917 Annual Meeting. The Secretary will be pleased to present invitations extended to the Council for acceptance.

President Biddle's Committee appointments for the present society year were published in the last issue and will be found in all future issues in the forepart of our advertising section. These committees are not ornaments of organization. They should be active, potent groups of selected individuals devoting time and energy to the tasks assigned them. The President urges that they be alert and active in order that their annual reports may reveal definite accomplishments.

The Medico-Legal Committee conducts the necessary steps in the protection of our members threatened with or sued for alleged malpractice. We desire to again call attention to the necessity of promptly notifying this Committee's representative in your local society should you need this protection. Your local representative will promptly place the matter before the Chairman of the State Committee. Members are urged to be guided by the instructions given by the local representative.

One more request and we will cease our comments on society affairs for this issue. In order that we may outline our editorial plans we request that the members who read papers at our Houghton meeting please send in their manuscripts so that they reach this office not later than October 15.

With "Infantile Paralysis" and "Railroad Strike" newspaper scareheads cast into discard we can again turn our attention to the "High Cost of Living" and the "European War" and possibly attain a concerted action in medical economics. You cannot, under present conditions, exist or thrive on 50 cent office and $1.00 house visits. If your services are worth anything they are certainly meriting a monetary remuneration of $1.00 to $2.00 for office visits and $2.00 to $3.00 house visits. Simply tell your patients that it costs more to be sick just as it costs more for every other class of service or commodity. Of course we are as ready and willing as ever to do charity work when deserving.

We cannot desist congratulating the Indiana and Ohio doctors on their having such splendid publications and their good fortune and foresight in selecting such capable editors. There are a goodly number of excellent state journals but these two represent and reflect a progressive profession and keen businesslike and commanding editors. We bow again in respect and admiration.

Unless there is witnessed a greater and intensive coordinated effort of the state profession for the protection of their interests and rights we are bound to speedily realize a curtailment of these rights by legislative enactments. Medical practice conditions are rapidly changing and innovations are rapidly being proposed and adopted. It is incumbent upon you to become actively alert and aggressive if you do not wish to cause the next ten years to witness the demise of the family and independent physician. You have vital interests at stake; you can ill afford to neglect them.

With the end in view of preparing some interesting information and data we will mail in the near future, a questionaire addressed to each member. We here request that on the receipt of this blank you will promptly answer each question in fullest detail. When the results are compiled we assure that no names will be mentioned nor will any personal comments be indulged in. Don't lay the blank aside—fill it out and return immediately.

Correspondence

Charlevoix, Mich., Sept. 9, 1916.

Dr. F. C. Warnshuis Secretary, Grand Rapids, Mich.

Dear Doctor: Veni, vidi, vici. I came, I saw, I conquered. We have met the enemy and they are ours. In other words Doctor, the celebrated Russell case vs. Wilkinson again came to trial and thanks to the Michigan State Medical Society through its counsel, Herbert V. Barbour of Detroit, the dead are lying in mangled heaps on every side—figuratively speaking, today.

The plaintiff wanted Judge Sullivan to preside and we wanted Judge Mayne, present candidate for the Supreme bench, on the ground that he was better qualified from experience in malpractice cases to conduct our case.

Plaintiff's attorneys had us in a hole and so we went ahead with Judge Sullivan of Muskegon. We found him absolutely unbiased in every particular and followed the law to the letter throughout the case. The expert shipped in from Detroit by plaintiff for a $50.00 fee failed to tell the jury in what

particular I had failed to give proper treatment which fatal error on part of plaintiff—after a deluge of "sob-stuff" to the jury—the good Judge carefully explained to the jury in his final charge was necessary to make their case according to law. This of course was tantamount to directing a verdict in favor of the defendant. The jury promptly retired and came back as soon as they could take a ballot with the cheering verdict "No cause for action." Of course the same old story of a shyster lawyer and a bad end result following a burn on a baby's hand with its subsequent contraction following for a long time after treatment had been suspended made the dismal combination which was supposed to mulct the doctor out of his hard earned savings. This is the fifth or sixth malpractice case brought in this county (Charlevoix) in the past three or four years, against the doctors of the county, and there are only about a dozen of us in the entire county. This naturally began to make the doctors of the county dread taking a case which might turn out badly in spite of all the doctor might do. Members of the A. C. E. Medical Society (Antrim, Charlevoix, Emmet) stood by like old time minute men ready to jump at any chance to give me any assistance in their power to a man. Notably among the number to render splendid service on the witness stand were Doctors John Reycraft, and Witter of Petoskey, Conkle of Boyne Falls and last but not least my own loyal co-practitioner, Dr. R. B. Armstrong of this city. These two trials of this case must have cost the plaintiff's attorneys around $500.00 as the plaintiff himself had nothing. My entire expense has been bourne by the State Society (my Medical Protective Policy having run out). So now I am inclined to think that the local shysters will lay low awhile and allow the doctor's to attend to their practice.

A. M. Wilkinson.

Deaths

Dr. F. D. Smith of Coopersville died August 19. He had been ill for three years and was 71 years old. He was a member of the Masons and Odd Fellows.

State News Notes

HALF A CENTURY'S PROGRESS.

October, 1916 points an epoch in the history of Parke, Davis & Co. The house was founded in 1866—just fifty years ago this month—largely upon the optimism of three or four determined men, backed by a capital that would seem insignificant today. There was nothing in its unpretentious origin to foretell the success of after-years. And by success we mean not merely material prosperity, but also that broader and more enduring success that is based upon good-will and confidence.

Manufacturing pharmacy was then a crude, imperfect art. Bacteriology, pharmacology and biological pharmacy were as yet unborn. There were no curative sera or vaccines in those days. Prophylaxis was in its infancy. Standardization was unknown.

Fifty years have wrought marvelous changes in means and methods for the treatment of human ills. The materia medica has been amplified beyond the dreams of the earlier investigators. Knowledge of pathology has immensely broadened. The empiricism of the past has given way to rational therapeutics, and medicine is taking its rightful place among the sciences.

In all these forward movements Parke, Davis & Co. have had some part—notably as discoverers of new vegetable drugs, as inventors of new chemical compounds, as pathfinders and producers in the field of biological manufacture, as investigators in original research, as pioneers in both chemical and physiological standardization.

The past half-century, as we have intimated, has been remarkable in its contributions to the newer materia medica. What will the next fifty years bring forward? Time alone can write the answer. Ours is a progressive age. The science of medicine has not reached its highest development. The physician's armamentarium will be further enlarged and fortified. New remedial agents will come into being. Many existing products will be improved. And with the fufillment of these conditions, Parke, Davis & Co. (if we may judge the future by the past) are certain to be identified.

Dr. I. J. Stoner, of Osseo, has purchased the practice of Dr. H. M. Warren of Jonesville. Dr. Warren retires after fifty-two years of continuous practice and October first will depart for Berkeley, Calif.

Dr. P. M. Crawford, for the last three years assistant physician at Oak Grove Hospital in Flint, has resigned. Dr. Crawford intends to locate in Chicago.

Holland citizens are agitating the establishment of a local hospital.

Dr. Harold S. Hulbert announces the opening of his office in Suite 805, Kresge Building, Detroit.

Dr. J. H. McCall of Detroit has located in Lapeer.

County Society News

SANILAC COUNTY

Sanilac County Medical Society held its first monthly meeting, at Lexington Beach, Tuesday July 18, 1916. The meeting was of a social as well as a professional character. The doctor's wives and the doctors of St. Clair, Lapeer and Huron, County Societies, and their ladies. Doctors L. J. Hirschman, W. A. Hackett, J. E. Gleason, of Detroit were the invited guests. Before the meeting the doctors and ladies spent a short social time visiting on the Beach, and at two o'clock sixty-five sat down to a delectable dinner served by the ladies of the Episcopal Church which disposed of was followed by the reading and discussing of papers that were both timely and practical.

Dr. Neil J. McColl, President of the Society presided.

The usual order of business was dispensed with.

The social features were interspersed by the following program: Dr. L. J. Hirschman, Detroit, gave an enlightened talk on "Colonic Constipation," discussion lead by Councilor, Dr. W. J. Kay, Lapeer. Dr. W. A. Hackett, Detroit, gave a splendid and comprehensive paper on "Ulcer of the Stomach," discussion lead by Dr. B. E. Brush, Port Huron, and Dr. J. H. Burley, Almont. Dr. J. E. Gleason, Detroit, gave a very interesting talk on, "The Cost of a Medical Education," he also demonstrated his method of "Enucleation of the Tonsil." All papers were vigorously discussed.

J. W. SCOTT, Secretary.

Book Reviews

GOULD AND PYLE'S CYCLOPEDIA OF PRACTICAL MEDICINE AND SURGERY, with particular reference to diagnosis and treatment. Third Edition, Revised, Enlarged. Cloth, 653 illustrations. Price $12.00. P. Blakiston's Son & Co., Philadelphia.

This is a handy volume, concise and authoritative, that presents the most important facts in all branches of medicine and surgery that are of working value to the practitioner. It also serves as a trustworthy handbook for easy and rapid reference. Numerous well-tried and valuable formulas are distributed through the volume.

The new revision has retained the old plan and provided opportunity for inserting new articles on recent developments in medicine and surgery.

The volume is one that will be of material assistance to the student, specialist, surgeon, practitioner and a trustworthy guide.

THE PRACTICE OF OBSTETRICS. Designed for the use of Students and Practitioners of Medicine, J. Clifton Edgar, Professor of Obstetrics and Clinical Midwifery, Cornell University Medical College. Fifth edition revised; 136 illustrations, five colored plates and thirty-four figures. Printed in colors. Cloth, 1067 pages. Price $6.00. P. Blakiston's Son & Co., Philadelphia.

This fifth edition incorporates new articles on painless labor, twilight sleep, pituitary extract in uterine inertia and the artificial feeding of infant.

This text has been so well known and authoritative for a number of years that its revision to date causes it to become our foremost text on obstetrics. It is indeed the volume that should be on the reference stand of every practitioner.

A PRACTICAL TREATISE ON DISORDERS OF THE SEXUAL FUNCTION IN THE MALE AND FEMALE. Max Huhner, M.D. Cloth, 318 pages, illustrated. Price $3.00. F. A. Davis Company, Philadelphia.

A volume that discussess the subject under consideration, understandingly, clearly and from a scientific standpoint.

A MANUAL OF OTOLOGY. FOR STUDENTS AND PRACTITIONERS. By Charles Edwin Perkins, M.D., F.A.C.S., Professor of Clinical Otology in New York University and Bellevue Hospital Medical College; Associate Aural Surgeon to St. Luke's Hospital; Assistant Aural Surgeon, New York Eye and Ear Infirmary; Fellow, American Otological Society, New York Otological Society, New York Academy of Medicine, etc. 12mo, 445 pages, with 120 engravings. Cloth, $3.00 net.

Diseases of the ear have assumed a major importance within recent years, largely because of the physiologic and pathologic relations that have been established between the ear and its adnexa and the brain; and also because of the growing role played by the infectious micro-organisms in ear diseases. Moreover, diseases of the ear are among the most common of the special sense disorders with which the general practitioner has to deal, and it is very essential that he should be up-to-date in his practical knowledge of the subject.

The author's long and very full experience both as a specialist and teacher has enabled him to produce a book which covers the subject completely and in a clear and concise manner. The handy size of the manual commends it for students' and practitioners' use; and nothing essential to a thorough understanding of otology has been omitted.

The prominence given to the five characteristics of the membrane (color, luster, position, integrity and structure) in the chapter on the examination of patients and the clarity with which the changes in otoscopic appearances are pointed out in the consideration of diseases of the ear should enable the reader to cultivate a systematic method and to form his diagnosis more readily.

The sections on the inner ear give the present knowledge of the subject and are based largely upon the author's personal experience. The relation of the Chorda tympani nerve to facial paralysis and middle ear disease—not clearly given in any book on otology—is here given in detail and represents the author's own observations.

Perkins' Manual of Otology represents the present status of this specialty, clearly set forth in practical, ready-to-use shape. It is a guide which can be followed by the student in college and by the general practitioner, as well as by the specialist, with both pleasure and profit.

THE CLINICS OF JOHN B. MURPHY, M.D. at Mercy Hospital Chicago. Volume V Number 4 (August, 1916). Octavo of 222 pages, 59 illustrations. Philadelphia and London: W. B. Saunders Company, 1916. Published Bi-Monthly. Price per year: Paper, $8.00, Cloth, $12.00.

Received.

THE MEDICAL CLINICS OF CHICAGO. Volume II Number 1 (July, 1916). Octavo of 220 pages, with 41 illustrations. Philadelphia and London: W. B. Saunders Company, 1916. Price per year: Paper, $8.00, Cloth, $12.00.

Received.

ELSBERG'S SURGERY OF CORD by Charles A. Elsberg, M.D. Professor of Clinical Surgery, New York University. Octavo, 330 pages, 153 illustrations, 3 in colors, cloth. Price $5.00. W. B. Saunders & Co., Publishers, Philadelphia.

This is the first text book devoted exclusively to the diagnosis and treatment of all the surgical diseases of the spinal cord, and its membranes. It at once appeals to the general practitioner, neurologist and surgeon because of its thorough and clear discussion of symptomatology, diagnosis indications for operation and operative technic.

The work is divided into three parts: The first to anatomy, physiology and symptomatology; the second discusses operations upon the spine, cord and nerve roots; the third is devoted to surgical diseases of the cord and membranes and their treatment. There is also a chapter on X-ray in spinal diseases.

The author's extensive experience at once causes this monograph to become an authoritative reference and guide. It presents each detail in a clear and definite language. We are deeply impressed by this scientific presentation of the subject and congratulate the author and publishers on its production.